EXHIBIT 3

CHESAPEAKE BAY CROSSING STUDY
TIER 1 NEPA

FINAL ENVIRONMENTAL IMPACT STATEMENT
and
RECORD OF DECISION

MARCH 2022

MDTA Maryland Transportation Authority
U.S. Department of Transportation Federal Highway Administration

CHESAPEAKE BAY CROSSING STUDY: TIER 1 NEPA

Maryland

FINAL ENVIRONMENTAL IMPACT STATEMENT AND RECORD OF DECISION

Submitted Pursuant to:
42 U.S.C. §4332(2)(C)

By:
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
and
MARYLAND TRANSPORTATION AUTHORITY

In Cooperation with:
US Army Corps of Engineers, US Environmental Protection Agency,
US Coast Guard, National Marine Fisheries Service,
Maryland Department of the Environment, Maryland Department of Natural Resources,
and the Maryland Department of Transportation State Highway Administration

4/8/2022
Date of Approval

William Pines, Executive Director
Maryland Transportation Authority

4/14/2022
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The Chesapeake Bay Crossing Study: Tier 1 NEPA analysis considered corridors for providing additional capacity and access across the Chesapeake Bay in order to improve mobility, travel reliability and safety at the existing Bay Bridge. The Study evaluated potential new corridor alternatives, including an assessment of existing and potentially expanded transportation infrastructure needed to support additional capacity, improve travel times, and accommodate maintenance activities, while considering financial viability and environmental responsibility. This combined Tier 1 Final Environmental Impact Statement and Record of Decision includes responses to public and agency comments received during the comment period on the Tier 1 Draft Environmental Impact Statement (February 23 through May 17, 2021). This combined document also provides additional information concerning the analysis of corridor alternatives and anticipated environmental effects based on public and agency input. On the basis of all this information and the entire Study administrative record, FHWA and MDTA select Corridor 7 as the Preferred Corridor that best meets the Tier 1 Study Purpose and Need.

CHESAPEAKE
BAY CROSSING STUDY
TIER 1 NEPA

FINAL ENVIRONMENTAL IMPACT STATEMENT

MARCH 2022

MDTA
Maryland
Transportation
Authority

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ABBREVIATIONS & ACRONYMS

ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
ADT	Average Daily Traffic
AET	All Electronic Tolling

ABBREVIATIONS & ACRONYMS

APE	Area of Potential Effects
BMC	Baltimore Metropolitan Council
BCS	Bay Crossing Study
BRT	Bus Rapid Transit
CAA	Clean Air Act
CARA	Corridor Alternatives Retained for Analysis
CAV	Connected and Automated Vehicle
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	Methane
CHART	Coordinated Highways Action Response Teams
CO_2	Carbon Dioxide
CWA	Clean Water Act
DEIS	Draft Environmental Impact Statement
EFH	Essential Fish Habitat
EIA	Energy Information Administration
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
EV	Electric Vehicle
FAST (Act)	Fixing America's Surface Transportation
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Administration
FHWA	Federal Highway Administration
FIDS	Forest Interior Dwelling Species
FIRM	Federal Insurance Rate Map
FHWA	Federal Highway Administration
GHG	Greenhouse Gas
GIS	Geographic Information System
ICM	Interagency Coordination Meeting
iPaC	Information for Planning and Consultation
JPA	Joint Permit Application
LOS	Level of Service
MCCC	Maryland Commission on Climate Change
MDE	Maryland Department of the Environment
MDNR	Maryland Department of Natural Resources

ABBREVIATIONS & ACRONYMS

MDOT	Maryland Department of Transportation
MDP	Maryland Department of Planning
MDTA	Maryland Transportation Authority
MDTA-RPCA	Maryland Transportation Authority-Recommended Preferred Corridor
MHHW	Mean Higher High Water
MHT	Maryland Historical Trust
MOA	Modal and Operational Alternative
MSAT	Mobile Source Air Toxics
MSTM	Maryland Statewide Transportation Model
MTA	Maryland Transit Administration
NATA	National-Scale Air Toxics Assessment
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NSA	Noise-Sensitive Area
PCA	Preferred Corridor Alternative
PM	Particulate Matter
$PM_{2.5}$	Fine Particulate Matter
ROD	Record of Decision
SAV	Submerged Aquatic Vegetation
SCA	Selected Corridor Alternative
SHA	State Highway Administration
SHPO	State Historic Preservation Officer
SSPRA	Sensitive Species Project Review Areas
TSM/TDM	Transportation System Management / Travel Demand Management
TSMO	Transportation Systems Management and Operations
TSO	Transportation Secretary's Office
USACE	United States Army Corps of Engineers
USC	United States Code
USCG	United States Coast Guard
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency

ABBREVIATIONS & ACRONYMS

USFWS	United States Fish and Wildlife Service
VMT	Vehicle Miles Traveled
VPD	Vehicles per Day
WOTUS	Waters of the United States
ZEEVIC	Zero Emission Electric Vehicle Infrastructure Council
ZEV	Zero Emission Vehicle

1 INTRODUCTION

The Maryland Transportation Authority (MDTA), in coordination with the Federal Highway Administration (FHWA), is conducting the Chesapeake Bay Crossing Study: Tier 1 National Environmental Policy Act (NEPA), referred to as the "Bay Crossing Study" (BCS). As announced by Governor Larry Hogan, the Bay Crossing Study is the critical first step to begin addressing existing and future congestion at the William Preston Lane Jr. Memorial Bridge (Bay Bridge) and its approaches along US 50/US 301. The study encompasses a broad geographic area, spanning nearly 100 miles of the Chesapeake Bay (the Bay) from the northern-most portion in Harford and Cecil counties to the southern border with Virginia between St. Mary's and Somerset counties.

The Tier 1 Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) has been prepared pursuant to Council on Environmental Quality (CEQ) regulations[1] at 40 CFR 1502 and 40 CFR 1505.2 and FHWA regulations at 23 CFR 771.124 – 127. The FEIS provides supplementary information; revisions to the February 2021 Draft Environmental Impact Statement (DEIS) in consideration of agency and public comments received on the DEIS and responses to comments received.

A combined FEIS and ROD document (per 23 USC §139(n), 23 CFR 771.124) does not have a comment period or a 30-day waiting period because these documents are published as a single document. The US Environmental Protection Agency (USEPA) publishes a Notice of Availability (NOA) in the Federal Register for combined FEIS/ROD documents.

The full text of the DEIS is not reproduced in this document. Rather, the FEIS focuses on changes and updates to the DEIS, summaries and responses to public and agency comments, and identification of Corridor 7 as the Preferred Corridor Alternative (PCA). The ROD documents Corridor 7 as the Selected Alternative. The content of the DEIS remains valid except where changes are noted in this FEIS. The following sections are included in this FEIS/ROD:

- **Chapter 1 - Introduction** – Provides background information on the Bay Crossing Study, Purpose and Need, DEIS Activities, and the PCA.
- **Chapter 2 - Errata Table of Changes** – Lists specific edits and corrections to the DEIS.
- **Chapter 3 – Supplementary Analysis and Discussion** – Provides supplementary information on topics including Traffic, Climate Change and Sea Level Rise, Environmental Justice, and Section 106 of the U.S. Department of Transportation Act of 1966.

[1] The EIS was prepared under the CEQ regulations in place prior to the 2020 CEQ update.

- **Chapter 4 – Summary of Public Involvement and Public Comments** – Summarizes the public outreach activities and comments received on the DEIS.
- **Chapter 5 - Summary of Agency Coordination and Comments** – Provides an overview of the agency coordination activities since the release of the DEIS and comments received from federal, state, and local agencies on the DEIS.
- **Chapter 6 – Preferred Corridor Alternative (PCA)** – Provides discussion of the rationale for identifying Corridor 7 as the PCA, including consideration of agency and public comments on the DEIS.
- **Chapter 7** – **Record of Decision** – Finalizes the selection of Corridor 7 as the Selected Alternative, with discussion of commitments and next steps.

Additionally, **Appendix A** includes all comments received during the DEIS comment period, with summaries and responses categorized by topics. **Appendix B** includes agency DEIS comments and responses. **Appendix C** includes a response to a report prepared by AKRF commissioned by the Queen Anne's Conservation Association. **Appendix D** includes agency correspondence since the DEIS.

1.1 Background

The Tier 1 NEPA Study represents the MDTA's first step within a two-tiered NEPA approach and includes a high-level, qualitative review of cost, engineering, and environmental data. Consistent with 40 CFR 1508.28, a tiered environmental review process is an appropriate strategy for NEPA review because of the regional needs to be addressed by the proposed action, the broad influence of the Bay Crossing from both an environmental and socio-economic perspective, and expansive size of the study's geographical area.

This Tier 1 NEPA Study has defined existing and future transportation conditions and needs at the existing Bay Bridge, identified broad corridor alternatives (including a "No-Build" alternative), documented the corridor alternative screening process, identified the most reasonable Corridor Alternatives Retained for Analysis (CARA), and evaluated potential environmental impacts of the CARA. The DEIS identified one PCA, Corridor 7, as the MDTA-PCA.

The Tier 1 NEPA Study will conclude following issuance of the ROD. Approval of the ROD does not presume initiation of a Tier 2 NEPA Study since no funding has been identified. In comparison to the more general Tier 1 analyses, a Tier 2 NEPA Study would result in project-level (site-specific) decisions made through evaluation of specific alignments within the PCA selected in the Tier 1 NEPA Study. Tier 2 analysis would include detailed engineering design of alternative alignments and the assessment of potential environmental impacts associated with those alignments. Consistent with NEPA's requirements, agency and public involvement would be an essential part of an eventual Tier 2 NEPA Study.

1.2 Summary of Purpose and Need

The Chesapeake Bay Crossing Study: Tier 1 NEPA considered corridors for providing additional capacity and access across the Chesapeake Bay in order to improve mobility, travel reliability and safety at the existing Bay Bridge. This Tier 1 NEPA Study evaluated potential new corridor alternatives through the

assessment of existing and potentially expanded transportation infrastructure needed to support additional capacity, improve travel times, and accommodate maintenance activities, while considering financial viability and environmental responsibility.

The following three primary needs were identified for the Tier 1 NEPA Study and are the basis for evaluating corridor alternatives:

- Adequate Capacity;
- Dependable and Reliable Travel Times; and
- Flexibility to Support Maintenance and Incident Management in a Safe Manner.

Congestion currently experienced at the Bay Bridge during weekdays and summer weekends is due to increasing travel demands and the inadequate capacity of the existing Bridge and its approach roadways. Adding to the congestion problem is a need for increased rehabilitation and maintenance efforts in future years, which will require lane closures and result in further back-ups and delays. The region needs a dependable Bay crossing that provides reliable operating speeds and travel times; facilitates emergency services and evacuation events; allows access to employment and recreation areas; and offers flexible options for safe travel during rehabilitation, maintenance, and incident management on the existing Bay Bridge. Therefore, the purpose of the Bay Crossing Tier 1 NEPA Study is to consider corridors for providing additional capacity and access across the Bay in order to improve mobility, travel reliability and safety at the existing Bay Bridge. After extensive vetting, including public input, the MDTA, FHWA, and the Bay Crossing Study cooperating agencies concurred on this Purpose and Need for the Bay Crossing Study.

The evaluation of potential new corridor alternatives for the Bay Crossing Study included an assessment of the transportation infrastructure needed, while also taking into account financial viability and environmental responsibility, accounting for potential adverse effects to the Bay and the important natural, recreational, socioeconomic and cultural resources it supports.

For more detailed information on the Bay Crossing Study Purpose and Need, refer to Chapter 2 of the DEIS and the Purpose and Need Statement.

The COVID-19 pandemic has had an impact on both weekday and weekend travel patterns throughout the nation, including at the Bay Bridge. The short-term impacts of the pandemic continue to evolve, and it is too soon to define the long-term impacts at this time. However, available data (presented in **Section 3.1**) indicates that Bay Bridge traffic levels have largely returned to pre-pandemic levels.

In April 2020, MDTA completed a $27 million deck rehabilitation project, which replaced the westbound outside lane deck surface. To expedite project completion, MDTA removed one travel lane from service during peak periods, which resulted in significant queuing during peak travel periods. MDTA has initiated design for similar improvements to the eastbound span, construction of which is anticipated to begin in 2022. This further underscores the need for new capacity to account for future maintenance activities at the Bay Bridge.

1.3 SUMMARY OF DEIS ACTIVITIES

Beginning on February 23, 2021, the DEIS, including the MDTA-Recommended Preferred Corridor Alternative (MDTA-RPCA), was made available for public review and comment through the BCS website (www.baycrossingstudy.com).

The Tier 1 DEIS was posted to the BCS website on February 23, 2021, with notices sent to the BCS mailing list. The Notice of Availability was published in the Federal Register on March 5, 2021. Overall, the public was afforded the opportunity to comment on the document for a period of 84 days, from February 23 through May 17, 2021. MDTA provided the public numerous options to comment on the document, which included submitting an email to info@baycrossingstudy.com, visiting the Bay Crossing Study website and leaving a comment through the online comment form; sending a letter to the MDTA; through private testimony which was available via voicemail during all testimony sessions; and through live public testimony at one of the six testimony sessions. Additionally, comments sent to Governor Hogan or Secretary of Transportation Gregory Slater were forwarded to MDTA.

Hard copies of the DEIS were also made available for public review. Due to the COVID-19 pandemic, the facilities that would normally host the document for public viewing were initially closed. After the DEIS was released and facilities gradually opened, the document was made available for public viewing at 13 locations throughout five counties in the study area. A phone line was made available for members of the public to request an alternative way to view the document.

For more information on public and agency comments received, refer to **Chapter 4** and **Chapter 5.** For a full list of comments received and responses, refer to **Appendix A** and **Appendix B**.

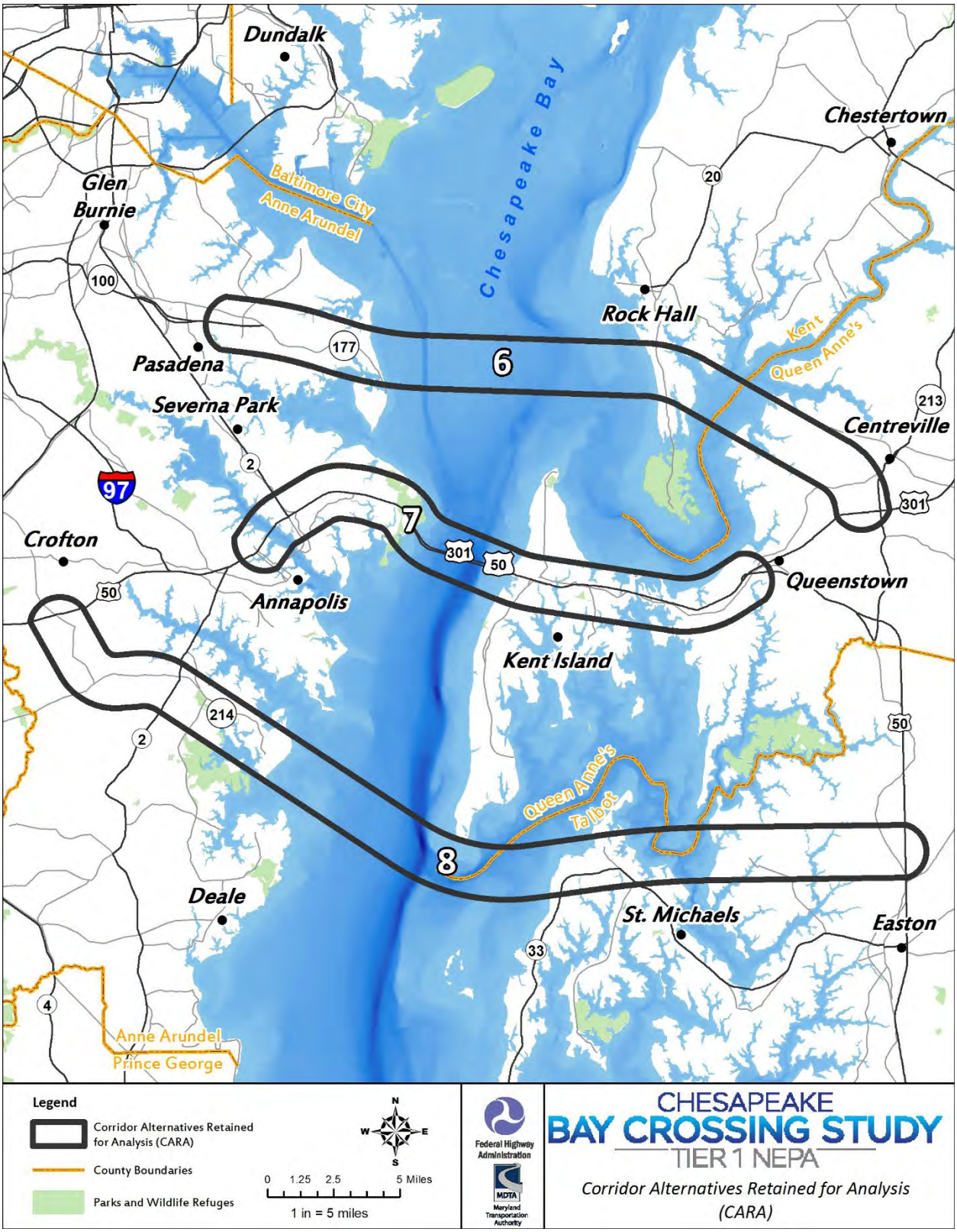
1.4 PREFERRED CORRIDOR ALTERNATIVE (PCA)

The February 2021 DEIS identified Corridor 7 as the MDTA-RPCA. Based on the information presented in the DEIS along with agency and public input received on the DEIS, and supplementary information included in this FEIS, MDTA has identified Corridor 7 as the PCA. See **Figure 1-1** for the limits of Corridor 7.)

Analysis of traffic considerations indicate that Corridor 7 would have substantial advantages over the other CARA, Corridors 6 and 8. (See **Chapter 6** for more detail.) Additional transportation capacity in Corridor 7 would:

- Provide the greatest traffic relief at the Bay Bridge and thus have a greater ability to meet the Tier 1 DEIS Purpose and Need.
- Divert substantially more traffic away from the Bay Bridge lanes in terms of total vehicles per day on both summer weekends and non-summer weekdays.
- Result in greater peak-hour congestion relief on the Bay Bridge lanes compared to an equivalent number of lanes in Corridors 6 or 8.

Figure 1-1: Corridor Alternatives Retained for Analysis (CARA)



Evaluation of engineering, cost, and environmental concerns also demonstrated substantial benefits of Corridor 7 compared to the other CARA. Specifically:

- Corridor 7 would likely be the least costly of the three CARA because of the ability to utilize existing roadway infrastructure on US 50/301 and the shorter length of crossing over the Chesapeake Bay.
- Corridor 7 would potentially have lower overall environmental impacts due to the shorter Chesapeake Bay crossing length and ability to utilize existing on-land roadway infrastructure along US 50/301. Corridors 6 and 8 would require longer crossings and more roadway infrastructure along a new alignment, likely resulting in greater impacts to sensitive environmental resources in and around the Chesapeake Bay.
- Corridors 6 and 8 would likely cause substantial indirect effects from new connectivity between rural lands on the Eastern Shore and employment centers such as Baltimore and Washington, DC. Corridors 6 and 8 could lead to substantial pressure for new residential development, especially on the Eastern Shore, with corresponding impacts to farmland and natural resources. Corridor 7 would have some indirect effects, but they would be more consistent with existing land use patterns and plans.

MDTA received a total of 861 comments during the DEIS comment period, including public testimony, written comments, and electronic submissions. Federal, state, and local agencies also provided comments on the DEIS. All comments have been reviewed and where warranted, changes to the DEIS have been addressed. **Chapters 4** and **5**, **Attachment A**, and **Attachment B** include more detailed discussion of public and agency comments.

2 ERRATA TABLE OF DEIS CHANGES

Table 2-1 below provides an overview of edits to the text of the DEIS. These edits reflect relatively minor updates and corrections that were identified based on agency and public comments. Each row of the table includes the section and page number of the DEIS where the original text is located, the revised text with edits shown in red, and notes to explain the revision made. More substantial additions to the DEIS text are included in **Chapter 3**, Supplementary Analysis.

Table 2-1: Errata Table of DEIS Changes

DEIS LOCATION	REVISED TEXT	REVISION NOTES
Section 4.1.4 (Page 4-10)	~~The FHWA Title VI Program requires consideration of~~ Executive Order (EO) 12898 – Federal Actions to Address Environmental Justice (EJ) in Minority and Low-Income Populations (1994) directs federal agencies to ensure federal programs do not result in disproportionately high and adverse environmental or health impacts to these populations by requiring federal agencies to: *"…promote nondiscrimination in federal programs substantially affecting human health and the environment and provide minority and low-income communities' access to public information on, and an opportunity for public participation in, matters relating to human health or the environment."*	Revised to remove reference to Title VI.
Section 4.2.3.2 (Page 4-28)	There are 14 recorded historic properties in Corridor 7 (**Table 4-13**), including two National Historic Landmarks (NHLs): the U.S. Naval Academy (AA-359) and Whitehall (MIHP AA-325). The U.S. Naval Academy was designated an NHL on July 4, 1961. Properties determined eligible for the NRHP include the Stevensville Historic District. Whitehall, located at the edge of Corridor 7, was designated as a NHL on October 9, 1960 and listed in the NRHP on October 15, 1966.	Revised to add Whitehall, located at the edge of Corridor 7.

<table>
<tr><th>DEIS LOCATION</th><th>REVISED TEXT</th><th>REVISION NOTES</th></tr>
<tr><td>Section 4.2.3.2 (Page 4-28)</td><td>A new crossing within Corridor 7 could impact 14 recorded historic properties, including two NHLs: the U.S. Naval Academy (MIHP AA-359) and Whitehall (MIHP AA-325). Particular attention must be paid to the U.S. Naval Academy and Whitehall per Section 110(f) of the NHPA and 36 CFR 800.10 which requires the agency official to undertake such planning and actions as may be necessary, to the maximum extent possible, to minimize harm to any NHL that may be directly and adversely affected by an undertaking. A Tier 2 alignment within Corridor 7 that is adjacent to the existing US 50/301 corridor on its southern side would have the potential to avoid impacts to the U.S. Naval Academy as well as the Stevensville Historic District and White's Heritage. Approximately 2.5 acres of the 115-acre Whitehall property are located within the edge of Corridor 7; avoidance of this resource would be possible. Of the three CARA, selecting Corridor 7 as the preferred corridor alternative would require the most architectural surveying during Tier 2.</td><td>Revised to add Whitehall, located at the edge of Corridor 7.</td></tr>
<tr><td>Table 4-13 (Page 4-29)</td><td>Table 4-13: Historic Properties within Corridor 7
<table>
<tr><th>ID</th><th>COUNTY</th><th>MIHP NO.</th><th>NAME</th><th>STATUS AND DATE</th><th>SIGNIFICANCE CRITERION</th></tr>
<tr><td>14</td><td>Anne Arundel</td><td>AA-325</td><td>Whitehall</td><td>Listed 10/15/1966; NHL designated 10/9/1960</td><td>C-Architecture</td></tr>
</table></td><td>Added new row to Table 4-13 to include Whitehall.</td></tr>
<tr><td>Table 4-16 (Page 4-32)</td><td>Table 4-16: Summary of Historic Properties and Architectural Resources within the CARA
<table>
<tr><th>CORRIDOR</th><th>RECORDED HISTORIC PROPERTIES</th><th>UNEVALUATED MIHP RESOURCES</th><th>NOT ELIGIBLE RESOURCES</th><th>RESOURCES BUILT PRE-1980</th></tr>
<tr><td>6</td><td>2</td><td>37</td><td>20</td><td>1,070</td></tr>
<tr><td>7</td><td>14 (including 2 NHLs)</td><td>94</td><td>44</td><td>2,130</td></tr>
<tr><td>8</td><td>15</td><td>102</td><td>10</td><td>1,254</td></tr>
</table></td><td>Revised Table 4-16 to include Whitehall.</td></tr>
</table>

<table>
<tr><th>DEIS LOCATION</th><th>REVISED TEXT</th><th>REVISION NOTES</th></tr>
<tr><td>Section 4.3.5 (Page 4-39)</td><td>MDTA has inventoried 30 recorded historic sites within the CARA. There are two in Corridor 6, 14 in Corridor 7, and 14 in Corridor 8. In addition to the recorded historic sites, MDTA has identified nine additional archaeological sites that are listed in the NRHP or eligible for listing in the NRHP. There are four in Corridor 8 and 5 in Corridor 9. Archaeological sites are only subject to Section 4(f) if they possess value for preservation in place. No determination on whether these sites possess value for preservation in place will be made during Tier 1. Coordination with the official with jurisdiction, MHT, is required to obtain a lack of objection that archaeological sites possess minimal value for preservation in place. This coordination would take place during Tier 2. Table 4-18 summarizes the known historic sites that could potentially be affected if Tier 1 concludes with the identification of a corridor as the Selected Alternative. If Tier 1 identifies the No-Build as the Selected Alternative, no Section 4(f) Historic Sites would be affected. The official with jurisdiction over historic sites in Maryland is the MHT. The ACHP is also participating in Section 106 Consultation for the Bay Crossing Study and is also an OWJ over Historic Sites. The greatest number of historic sites is within Corridor 8. MDTA has also identified two NHLs: the United States Naval Academy and Whitehall in Corridor 7. The National Park Service is an additional OWJ over NHLs. Impacts to NHLs warrant more stringent consultation under Section 106 as outlined in 36 CFR 800.10, up to and including involvement of the Secretary of the Interior (36 CFR 800.10(c)). Relatively small portions of the U.S. Naval Academy and Whitehall are within Corridor 7 and impacts are likely to be avoided.</td><td>Revised to add Whitehall, located at the edge of Corridor 7.</td></tr>
<tr><td>Table 4-18 (Page 4-40)</td><td>Table 4-18: Inventory of Section 4(f) Historic Sites
<table>
<tr><th>ID</th><th>SECTION 4(f) PROPERTY</th><th>SIZE (ACRES)</th><th>AREA WITHIN CORRIDOR</th><th>COUNTY</th></tr>
<tr><td colspan="5">Corridor 7</td></tr>
<tr><td>14</td><td>Whitehall (NHL)</td><td>115</td><td>2.5</td><td>Anne Arundel</td></tr>
<tr><td colspan="2">Area of Historic Sites in Corridor 7</td><td colspan="3">463</td></tr>
</table></td><td>Revised Table 4-18 to include Whitehall.</td></tr>
</table>

DEIS LOCATION	REVISED TEXT	REVISION NOTES
Section 4.4.2 (Page 4-45)	The Maryland Tidal Wetlands Act restricts construction and development actions in tidal wetlands. The Board of Public Works (BPW) authorizes Tidal Wetlands Licenses. In some cases, BPW allows MDE to directly issue a license via COMAR Title 26.24. In other cases, MDE reviews the application and makes a recommendation to BPW as to whether a license should be issued. In those latter cases, the Board's Wetlands Administrator receives MDE's recommendation, conducts an independent review, and then submits a recommendation to BPW. BPW votes to grant or deny the license application at one of its regularly scheduled open meetings. The Maryland Tidal Wetlands Act provides protection against unregulated activities that would affect adversely the value of the tidal wetland as a source of nutrients to finfish, crustacea, and shellfish of significant economic value.	Revised to clarify the Maryland Tidal Wetlands Act administration.
Section 4.4.2 (Page 4-45)	Section 404 regulations at 40 CFR Part 230.3(t) defines a jurisdictional wetland as follows: "Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." A Section 404 authorization triggers the requirement to satisfy the conditions identified under Section 401 of the Clean Water Act (CWA). Section 401 requires any applicant seeking a federal permit or license for an activity that "may result in any discharge into the navigable waters" to obtain a water quality certification from the State. This requirement ensures that the proposed activity will not violate State water quality requirements in addition to other requirements under the CWA. Section 401 recognizes that water quality standards are set at state and tribal levels; it provides a process for federal agencies to check in with states and have them certify that the project will not violate these standards and other requirements.	Added a new paragraph to note the Water Quality Certification (WQC) requirements.

DEIS LOCATION	REVISED TEXT	REVISION NOTES
Section 4.4.2.1 (Page 4-54)	Corridor 7 contains approximately 394,020 linear feet of mapped surface waters associated with tributary rivers and streams, (Figure 4-8). The western portion of the corridor intersects with the Severn River and multiple tributaries to the Severn River within the extreme western portion of the study area. The Severn River is classified as a State designated Scenic and Wild River. Because of this classification, potential impacts to the Severn River and its viewshed would need to be coordinated with MDNR at a later phase. Continuing east, Corridor 7 intersects with Mill Creek, Whitehall Creek, and Meredith Creek before spanning the Bay. As it continues east across the Bay, Corridor 7 intersects with Thompson Creek and Cox Creek on Kent Island, and the Wye River and Wye River East within the eastern portion of the corridor. The Wye River is classified as a Tier II High Quality Water. The larger, tidal waters associated with Corridor 7 are classified as Use Class II waters, while the smaller, non-tidal tributaries are classified as Use Class I.	Revised to note the correct term "State designated Scenic and Wild River". (Corrected from "Wild and Scenic").
Section 4.4.4 (Page 4-59)	The Chesapeake Bay Critical Area encompasses land that is within 1,000 feet of the mean high tide line of the bay and adjacent streams and rivers. Within the Critical Area, three land classifications have been designated: Intensely Developed Areas (IDAs), Limited Development Areas (LDAs), and Resource Conservation Areas (RCAs). Each of these areas has specific regulations that dictate future development while accounting for the current surrounding land use and land cover. The Critical Area also has two additional areas identified as Corporate Land (CL) and Federal Land (FED). These designations are for lands that are corporately owned or owned by the federal government and are not classified as RCA, LDA, or IDA because activities on these lands are not directly regulated through the state's Critical Area Program but are regulated through the Coastal Zone Management Act. The Critical Area Commission (CAC) also regulates a 100-foot buffer which consists of the first 100-feet landward of tidal waters, tidal wetlands, or tributary streams. For further protection, the 100-foot buffer is expanded to include steep slopes, adjacent non-tidal wetlands, and hydric or highly erodible soils. Through partnerships with local and state agencies, the Chesapeake Bay Critical Area program also provides protection for habitat protection areas, including; non-tidal wetlands, threatened and endangered species habitat, species in need of conservation, anadromous spawning waters, and designated and regulated state and local plant and wildlife habitats.	Added text to explain the Critical Area program habitat protection areas.

DEIS LOCATION	REVISED TEXT	REVISION NOTES
Section 4.4.4.2 (Page 4-61)	Corridor 7 contains approximately 9,810 acres of land that falls within the limits of the Critical Area. The majority is classified as RCA but the corridor also contains relatively high levels of both LDA and IDA (**Figure 4-10**). Within the western extent, the Critical Area is primarily associated with the Severn River and the western shoreline of the Bay. A large portion of the western extent of Corridor 7, primarily along the northern corridor border, is located outside the limits of the Critical Area. A large area of CL is mapped within the western portion of Corridor 7, just north of Annapolis, MD. Impacts to CL are administered under the Coastal Zone Management Act, not the Critical Area Program.	Revised misspelling of "area."
Section 4.4.4.4 (Page 4-62)	Coordination with the CAC Staff and local jurisdictions would be required to evaluate potential impacts and associated mitigation should a corridor alternative be carried forward for further evaluation. During the planning process, special attention must be paid to areas with steep slopes and highly erodible soils, adjacent non-tidal wetlands, and areas containing hydric soils as these areas will be subject to Critical Area buffer expansion.	Revised to add additional areas subject to Critical Area buffer expansion.
Section 4.4.7 (Page 4-73)	The EFH data were obtained from the NOAA EFH Data Inventory that categorizes EFH by fish species. The categories include habitat for Atlantic butterfish (*Peprilus tricanthus*), black sea bass (*Centropristis striata*), bluefish (*Pomatomus saltatrix*), scup (*Stenotomus chrysops*), and summer flounder (*Paralichthys dentatus*). For the purposes of this comparative analysis, these fish species have been combined into a single EFH category. While not listed in the data inventory, it should also be noted that the project area contains designated EFH for juvenile and adult windowpane flounder (Scophthalmus aquosus). **Appendix A** includes detailed maps of SAV within each corridor.	Revised to include information about windowpane flounder.

DEIS LOCATION	REVISED TEXT	REVISION NOTES
Section 4.4.7.4 (Page 4-77)	The corridor study areas intersect with larger tributaries that serve as critical spawning, migrating, resting, feeding, and rearing habitat for anadromous fish including American Shad. Corridor 6 spans the Chester River along the Eastern Shore and provides the largest area of critical spawning habitat of the three corridor study areas. Corridor 6 also spans a small section of Magothy River spawning habitat, located along the Western Shore. Corridor 8 spans a relatively large area of critical spawning habitat associated with the Eastern Bay and Miles River, also along the Eastern Shore. Corridor 7 contains the least amount of critical spawning area and is associated with the Severn River, along the Western Shore near Annapolis, MD.	Revised to include additional life stages for anadromous fish.
Section 4.4.7.4 (Page 4-78)	"Special Aquatic Sites" are regulated under Section 404 of the CWA as a subset of WOTUS and are classified as areas which possess special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. NOB's, oyster sanctuaries, and SAV are all considered Special Aquatic Sites under Section 404. Other Special Aquatic Sites include vegetated tidal wetlands, mudflats, and subaqueous gravel substrates. These sites are generally recognized as significantly influencing or positively contributing to the overall environmental health of the entire ecosystem and receive special attention under EPA's Section 404 (b) (1) guidelines. Because degradation or destruction of these areas may result in an irreversible loss of valuable aquatic habitat, emphasis must be placed on avoidance and minimization should a corridor alternative be carried forward for further evaluation in a more detailed Tier 2 analysis.	Revised to add additional Special Aquatic Sites categories.
Section 4.4.8 (Page 4-78)	To provide a comparative analysis of potential impacts associated with soils, this study focuses on soils that are classified as hydric, partially hydric, or highly erodible. Hydric and partially hydric soils are typically those associated with jurisdictional wetlands. Highly erodible soils are defined as soils with an erodibility K factor greater than 0.35 on slopes greater than 5 percent or any soil with a slope greater than 15 percent, regardless of the K factor. K factor is the soil erodibility factor which represents both susceptibility of soil to erosion and the rate of runoff.	Revised to include a more complete definition of highly erodible soils.

<table>
<tr><th>DEIS LOCATION</th><th>REVISED TEXT</th><th>REVISION NOTES</th></tr>
<tr><td>4.8.2.3
(Page 4-108)</td><td>The ICE Analysis also considered the recorded historic properties identified within the CARA, as described in Section 4.2. The FHWA and MDTA have initiated the Section 106 consultation process and will implement the phased identification of historic properties. This Tier 1 EIS involves the identification of recorded historic properties within the CARA, as defined in Section 4.2.1. There are two recorded historic properties in Corridor 6. There are 14 historic properties in Corridor 7, including three historic districts: Stevensville Historic District, White’s Heritage, and U.S. Naval Academy. The U.S. Naval Academy and Whitehall are also NHLs. There are 20 historic properties in Corridor 8, including two historic districts: Davidsonville Historic District and Unionville. One of the historic properties in Corridor 8 is the skipjack Claud W. Somers, a ship that has not been docked within its historic boundary since relocating to Virginia in 2000 for restoration. Nonetheless, it is included in the initial inventory of historic properties.</td><td>Revised to include Whitehall and number of historic sites corrected.</td></tr>
<tr><td>Table 4-46
(Page 4-115)</td><td>Table 4-46: Major Present and Reasonably Foreseeable Future Transportation Projects within the ICE Analysis Boundary
<table>
<tr><th>PROJECT</th><th>SOURCE</th><th>LOCATION</th><th>DESCRIPTION</th><th>STATUS</th></tr>
<tr><td colspan="5">Eastern Shore</td></tr>
<tr><td>US 301 over Chester River Bridge Replacement Project</td><td>MDOT SHA</td><td>Queen Anne’s and Kent</td><td>Replacement of US 301 Bridge over Chester River</td><td>Design</td></tr>
</table></td><td>Revised to add the US 301 over Chester River Bridge Replacement project.</td></tr>
</table>

<table>
<tr><th>DEIS LOCATION</th><th>REVISED TEXT</th><th>REVISION NOTES</th></tr>
<tr><td>Table 4-48 (Pages 4-123 to 4-125)</td><td>

Table 4-48: Environmental Resources Inventory Summary

RESOURCE	UNIT	CORRIDOR 6	CORRIDOR 7	CORRIDOR 8
Section 4(f) Resources				
Historic Sites	Count	2	14	14
Area of Historic Sites	Acres	160	460	510
Total Section 4(f) Resources	Count	10	26	25
Total Area of Section 4(f) Resources	Acres	1,190	1,680	1,650
Cultural Resources				
Recorded NRHP Eligible or Listed Properties	Count	2	14	14

</td><td>Revised to include Whitehall. (Note that the columns for Area of Historic Sites and Total Area of Section 4(f) Resources are rounded to the closest 10 acres, so the total did not change with the addition of Whitehall).</td></tr>
</table>

3 SUPPLEMENTARY ANALYSIS AND DISCUSSION

In response to public and agency comments on the DEIS, this section provides supplementary analysis and discussion on topics such as traffic, including the impact of COVID 19 and all electric tolling on future traffic volumes and patterns, consideration of climate change/sea level rise and environmental justice, and National Historic Preservation Act (NHPA) Section 106 compliance.

3.1 TRAFFIC

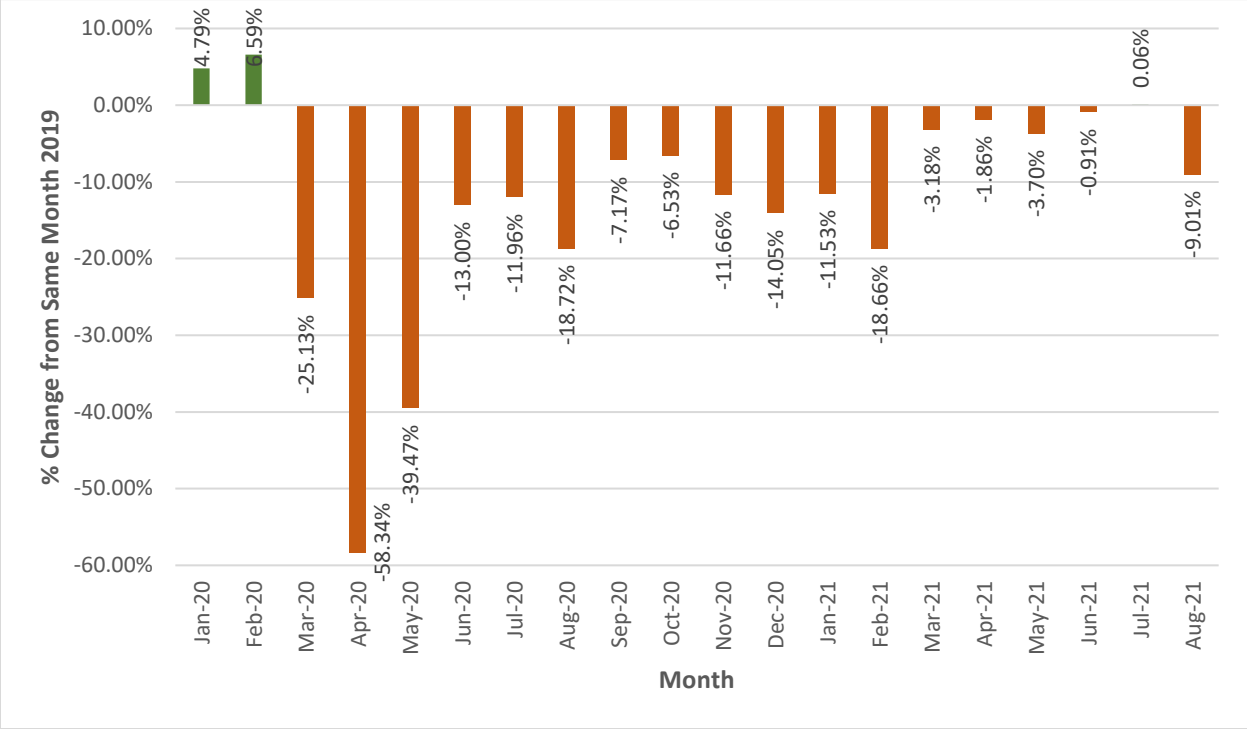
Commenters during public and agency review of the DEIS raised three major traffic-related topics. The first two topics dealt with potential impacts to congestion and travel patterns as a result of changes which have occurred since the time the traffic analyses for the DEIS were performed: the COVID-19 pandemic (which began in March 2020) and commencement of all-electronic tolling at the Bay Bridge (which occurred in the Spring of 2020). The third traffic-related topic addressed the adequacy of traffic volume data collected during August 2017 which was used in the DEIS analyses. These three topics are discussed below.

3.1.1 COVID-19 Pandemic

The COVID-19 pandemic has had an impact on both weekday and weekend travel patterns throughout the nation, including at the Bay Bridge. The short-term impacts of the pandemic continue to evolve, and it is too soon to define or to accurately assess the long-term impacts.

Figure 3-1 shows the percentage change in monthly traffic volumes at the Bay Bridge compared to the same month in 2019. Traffic volumes at the Bay Bridge dropped substantially during March 2020, as the pandemic's effects began to be felt, and dropped even further in April 2020, following issuance of a statewide Stay at Home order on March 30, 2020. Travel restrictions were eased somewhat in May 2020, with the issuance of a Safer at Home public health advisory which was effective on May 15, 2020, and volumes began to increase. Following the end of most COVID-19 restrictions in Maryland in mid-May 2021, volumes at the Bay Bridge have generally continued to increase, with volumes during July 2021 exceeding pre-pandemic levels.

Figure 3-1: Monthly Volumes Comparison on Eastbound US 50 at Bay Bridge



If a Tier 2 NEPA study is performed, the continuing impacts of the pandemic and recovery would be assessed in that Study. Updated traffic volume data would be collected and analyzed to establish a then-current baseline and applied in the calibration of an updated travel demand model used to forecast future traffic volumes. As with this Tier 1 EIS, the updated travel demand model used in Tier 2 NEPA would be based upon the travel demand models in use by regional and State planning agencies at that time.

Those regional and State models would additionally use updated forecasts of population and employment; it is anticipated that those models would either include or would be adapted as part of the Tier 2 NEPA study to incorporate long-term changes in travel behavior, to the extent that those changes are understood at that time. Additionally, a Tier 2 Study would include full consideration of a No-Build Alternative with a corresponding assessment of traffic under the No-Build condition, reflecting post-pandemic-related changes in the updated forecasts.

3.1.2 All-Electronic Tolling

Section 3.1.2.1 of the DEIS (Transportation Systems Management/Travel Demand Management [TSM/TDM]) includes the following text:

> *Implementing All Electronic Tolling (AET)*
>
> *This improvement includes replacing the existing toll booths with an overhead toll gantry that collect electronic tolls at highway speeds. AET commenced at the Bay Bridge in Spring 2020. Following completion of the Draft Tier 1 EIS, and prior to the preparation of the Final Tier 1 EIS,*

additional data collection will be performed to evaluate the effects of AET on eastbound operations.

Multiple comments on the DEIS expressed the opinion that the toll plaza was a major contributing factor to queues and delays on eastbound US 50, if not the only factor. Some felt that, once the toll plaza was removed, traffic operations would be significantly improved, and that lengthy queues would generally not be a problem. To address this concern, MDTA committed to examining in the FEIS the impact of implementing AET. This section discusses results of that additional data collection and analysis.

A direct comparison of "before AET" and "after AET" conditions is complicated by traffic volume changes resulting from the COVID-19 pandemic. A more direct comparison would be possible if traffic volumes immediately following the commencement of AET had been similar to traffic volumes immediately prior to the commencement of AET. However, as discussed in the preceding section of this document, traffic volumes were greatly affected by the onset of the pandemic and the ongoing recovery from it. As a result, the comparison is more complex.

MDTA continuously monitors traffic conditions on both the eastbound and westbound approaches to the Bay Bridge, adjusting the number of eastbound lanes between two and three based on various factors, including volumes in each direction, queue lengths in each direction, weather conditions, and response to incidents. Even at the termination of three eastbound lane operations, the Bay Bridge has recorded lingering queues in the eastbound direction on multiple occasions in June, July and August 2021. **Table 3-1** provides a sample of those queues.

Table 3-1: Observed Eastbound Queue Lengths (2021)

Day	Hour	Eastbound Queue Length at Termination of Three Eastbound Lanes Operation (miles)*
Wednesday, June 16, 2021	2PM	1.5
Friday, June 18, 2021	2PM	7.5
Thursday, June 24, 2021	5PM	4.1
Friday, June 25, 2021	2PM	2.5
Thursday, July 1, 2021	3PM	3.0
Saturday, July 10, 2021	12PM	1.5
Wednesday, July 14, 2021	5PM	6.0
Friday, July 16, 2021	2PM	2.5
Saturday, July 17, 2021	12PM	3.5
Friday, July 23, 2021	3PM	5.5
Saturday, July 24, 2021	12PM	3.0
Friday, July 30, 2021	3PM	3.5
Friday, August 13, 2021	3PM	1.5
Saturday, August 14, 2021	1PM	1.5

Day	Hour	Eastbound Queue Length at Termination of Three Eastbound Lanes Operation (miles)*
Friday, August 27, 2021	2PM	5.5
Saturday, August 28, 2021	2PM	3.5

* **Table 3-1** shows queue lengths at the end of "Three Eastbound Lanes Operation" and the beginning of "Two Eastbound Lanes Operation". Thus, even with three lanes in the eastbound direction, queues still occur. Ideally, "Three Eastbound Lanes Operation" would have continued until there were no longer queues in the eastbound direction. However, "Three Eastbound Lanes Operation" was terminated due to extensive queuing in the westbound direction, weather conditions, or incidents.

It should be noted that queues longer than those shown in **Table 3-1** can and do occur, during three eastbound lanes operation. For example, on Saturday, July 3, 2021, at 9AM, an eastbound queue of 5.5 miles was observed.

Examination of **Table 3-1** shows that queuing is still occurring on eastbound US 50 approaching the Bay Bridge following the commencement of AET and removal of the toll plaza. The ongoing significant queues observed shows that the implementation of AET and toll plaza removal by itself does not eliminate congestion in the eastbound direction. Given the volumes attempting to cross the Bridge during peak periods, the Bridge itself remains a constraint on capacity.

By eliminating the need for vehicles to slow or stop to pay their toll, AET can reduce delays and queuing at the Bay Bridge when low to moderate volumes are present; that is, when the capacity of the Bridge does not constrain traffic flow. However, as volumes approach the capacity of the Bridge, queues and delays still occur, even with AET.

If a Tier 2 NEPA study is performed, new existing conditions data, including traffic volumes and queues, will be obtained. AET will be part of those new existing conditions.

3.1.3 Existing Volumes

Some reviewers of the DEIS criticized the data used to support the traffic analysis. Among these critiques, commenters suggested that only one day of weekend traffic data from August 2017 was collected, that additional traffic data should have been collected, and that the data used in the DEIS were atypically high.

To clarify, seven days of data were collected for summer conditions, starting on August 1, 2017, and ending on August 7, 2017. Because both traditional weekday traffic peaks and summer weekend traffic peaks occur at the Bay Bridge, a week of data was obtained for both summer and non-summer conditions. In collecting traffic volume data for existing conditions, the study team attempted to capture average conditions at the Bay Bridge. Holiday weekends, when volumes and queues are known to be greater than average, were explicitly avoided during the data collection, so that typical conditions could be assessed. The collected data was reviewed for unusual volumes, which could have been indicative of atypical conditions such as major crashes, incidents, construction operations, or extreme weather. No unusual volumes were found. Additional details may be found in Chapter 4 of the Traffic Analysis Technical Report.

In addition, it should be noted that the average summer weekend volumes used in the DEIS analyses are a composite of Friday, Saturday, and Sunday volumes, and represent the highest volume in each hour during that three-day period. During the summer, eastbound traffic is typically much higher on Fridays and Saturdays than on Sundays, due to recreational traffic destined for the Eastern Shore. Similarly, westbound traffic is typically much higher on Sunday than on Fridays or Saturdays, as recreational traffic returns to the Western Shore. Combining the different directions for different days into a single set of data allowed the peak volumes in each direction to be represented, and allowed for concurrent analysis of the two directions, without affecting the integrity of those analyses.

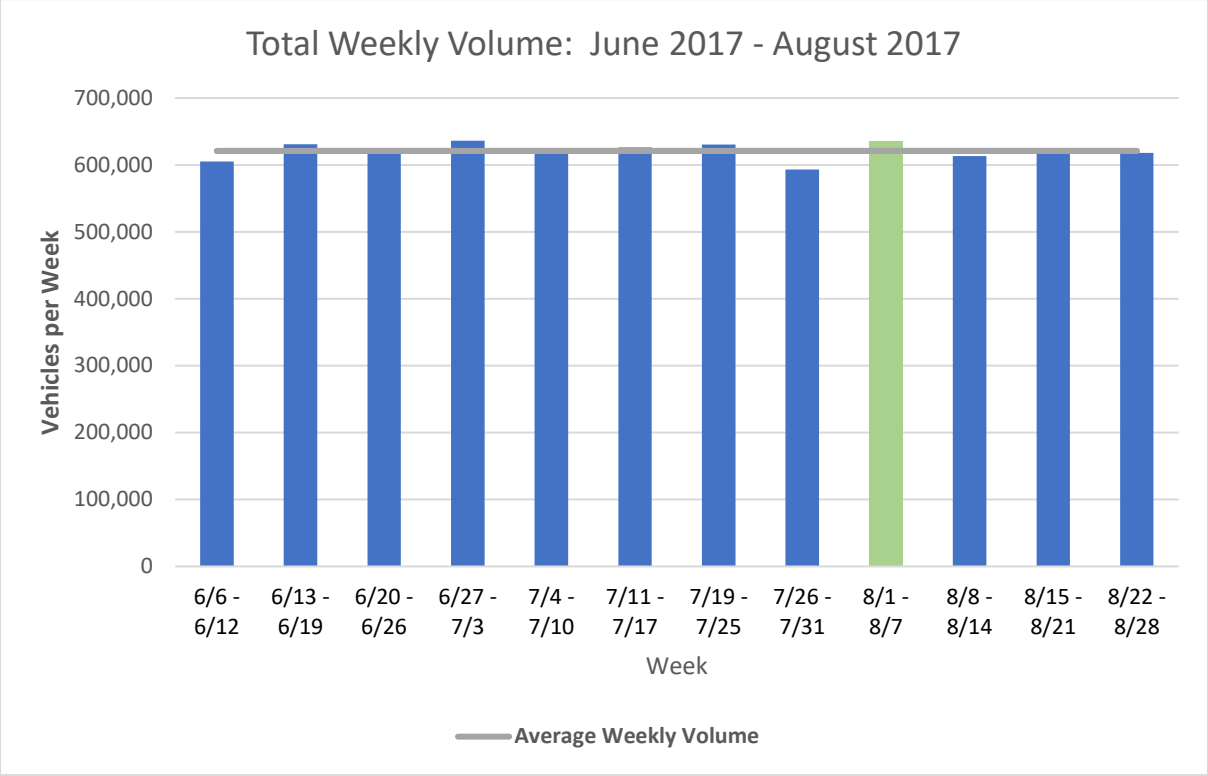
In response to public comments critical of the traffic analysis, data for the Bay Bridge for a wider range of dates, June through August 2017, was reviewed and is summarized in **Table 3-2** and **Figure 3-2** below. The week of data collection used in the DEIS is highlighted.

Table 3-2: Weekly Traffic Volumes on the Bay Bridge, June – August 2017

Week	Total Volume (vehicles)	Percentage Difference from Average Weekly Volume
6/6/17 – 6/12/17	605,053	-2.56
6/13/17 – 6/19/17	630,773	1.58
6/20/17 – 6/26/17	622,043	0.18
6/27/17 – 7/3/17	636,035	2.43
7/4/17 – 7/10/17	617,775	-0.51
7/11/17 – 7/17/17	625,989	0.81
7/18/17 – 7/24/17	630,278	1.5
7/25/17 – 7/31/17	593,258	-4.46
8/1/17 – 8/7/17	635,161	2.29
8/8/17 – 8/14/17	613,146	-1.26
8/15/17 – 8/21/17	624,042	0.5
8/22/17 – 8/28/17	617,914	-0.49
Average	**620,956**	**N/A**

Examination of **Table 3-2** and **Figure 3-2** confirms that the weekly volumes were relatively consistent throughout the summer of 2017. Total volume during the week of 8/1/17 through 8/7/17 was slightly higher than the average weekly volume of the June through August period, but still representative of that time period and not abnormally high. This variation from the average weekly volume is well within a range typically accepted in traffic engineering analyses. For example, in its "VISSIM Modeling Guidance" (August 2017), MDOT SHA requires that "The volume calibrations should not exceed 10% of the count traffic volume…" (page 14). The 2.29 percent difference noted in **Table 3-2** and **Figure 3-2** is well within this range. The volumes used appropriately represent existing conditions, and the analyses appropriately reflect existing conditions.

Figure 3-2: Total Weekly Volumes on Bay Bridge: June 2017 – August 2017



3.2 CLIMATE CHANGE AND SEA LEVEL RISE

MDTA received comments from agencies and the public regarding the potential impacts and considerations related to climate change and sea level rise. Greenhouse gas (GHG) emissions, sea level rise vulnerability, and climate change resiliency are all topics relevant to the discussion of a potential new Bay Crossing. MDTA would continue to evaluate these topic areas in a potential future Tier 2 study.

3.2.1 Greenhouse Gas Emissions

GHGs are an emission monitored by the U.S. Environmental Protection Agency (EPA). The primary GHGs in the Earth's atmosphere are Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), and Fluorinated Gases. GHGs are generated through burning fossil fuels and other human and natural sources. These emissions are different from criteria air pollutants since their effects in the atmosphere are global rather than localized, and since they remain in the atmosphere for decades to centuries. GHG emissions from vehicles using roadways are a function of multiple factors such as distance traveled (expressed as vehicle miles traveled [VMT]), vehicle speed, and road grade. GHG emissions are also generated during roadway construction and maintenance activities.

Currently, there are no federal mandated project planning requirements regarding the consideration of GHG impacts for transportation projects. Maryland also does not require GHG analysis at the project level. However, the CEQ provides guidance on considering GHGs in NEPA, which the MDTA has applied to this Tier 1 Study. Pursuant to Executive Order (EO) 13990, *Protecting Public Health and the Environment and*

Restoring Science to Tackle the Climate Crisis, CEQ rescinded its 2019 Draft *NEPA Guidance on Consideration of Greenhouse Gas Emissions* and is reviewing, for revision and update, the 2016 *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews*. As recommended in the 2016 guidance, a qualitative analysis of GHGs is being provided for this Tier 1 NEPA Study because tools, methodologies, or data inputs are not reasonably available to support calculations for a quantitative analysis as part of this Tier 1 study.

3.2.1.1 GHG Qualitative Analysis for Tier 1 NEPA Study

An assessment of broad-scale effects of GHG emissions was identified as the appropriate level of review for this Tier 1 NEPA Study because the analysis of broad corridor locations for a potential Bay crossing does not include details on specific alignments within the Corridor Alternatives. To perform a GHG analysis, affected road networks would need to be identified and traffic characteristics for those networks would be required, such as VMT and vehicle mix. Therefore, an analysis of GHG emissions during a Tier 1 NEPA Study would not produce meaningful results to provide the public and decision-makers with useful information regarding differences in Corridor Alternatives. The following assessment explores transportation factors that could produce either an increase or a decrease in GHG emissions. Since there are factors that could influence emissions in both directions, the resulting net increase or decrease in GHG emissions cannot be definitively determined at this time.

Factors Likely Increasing GHG Emissions

Under both the No-Build and CARA, VMT in the region is expected to increase between 2015 and 2040, the current projected design year; it is likely that GHG emissions will also increase between 2015 and 2040. Additionally, because the projected increase in truck volumes within Corridor 7 is slightly higher than the projected increase in Corridors 6 and 8, it is possible that Corridor 7 could result in greater vehicle emissions than Corridors 6 and 8.

Construction and subsequent maintenance of a new crossing would also generate GHG emissions. The sequence of construction is unknown during the current Tier 1 phase, therefore GHG emission during construction would be more appropriately analyzed during a potential future Tier 2 NEPA study.

Factors Likely Decreasing GHG Emissions

When traffic speeds and flow are optimized, less idling occurs; thereby reducing excessive emissions, including GHGs. The longest vehicle queues expected in year 2040 - where more idling would occur - are seen in the No-Build Alternative in both directions of travel at the existing crossing. As a No-Build Alternative would not address traffic speed and flow, excessive emissions from queuing would not be reduced under the No-Build Alternative.

By contrast, a new crossing in any of the CARA would be expected to draw some traffic from the existing Bay Bridge. Corridor 7 presents the best scenario for the predicted 2040 queue length at the existing crossing. Generally, the daily maximum queue length increases at the existing Bay Bridge the farther the Corridor Alternative is located from the existing crossing. Since Corridor 7 would result in the best congestion relief at the existing crossing location, with less queuing and idling, it would likely result in lower GHG emissions from queuing than Corridors 6 and 8.

A major factor in mitigating the GHG emissions associated with transportation is more stringent fuel economy standards, which would occur under the Build and No-Build scenarios. The federal Energy Information Administration (EIA) projects that vehicle energy efficiency (and thus, GHG emissions) on a per-mile basis will improve by 28 percent between 2012 and 2040. Under a Build Alternative, more efficient vehicles along with reduced congestion could offset some GHG emissions from the transportation network.

3.2.1.2 Future GHG Analysis for Potential Future Tier 2 NEPA Study

Projected GHG emissions may be further analyzed for alternative alignments during a potential future Tier 2 NEPA analysis if warranted and practicable. As noted previously, to perform a meaningful GHG analysis, affected road networks would need to be identified and traffic characteristics for those networks would be required, such as VMT and vehicle mix. Alternative alignments within the Tier 1 PCA could be evaluated for GHG emissions and compared to the No-Build Alternative in a Tier 2 NEPA study.

If necessary, mitigating measures could be explored during a potential future Tier 2 NEPA study to help offset any potential increase in GHG emissions associated with construction of a new crossing.

3.2.1.3 Mitigation Measures for GHG Reduction

The Maryland Department of Transportation (MDOT) is exploring strategies and programs aimed at reducing GHG emissions in conjunction with Maryland's Greenhouse Gas Emissions Reduction Act (GGRA), which requires a 40 percent reduction of emissions from 2006 levels by 2030. In 2019, Maryland's GGRA Plan was updated to strive for a 50 percent reduction in GHG emissions by 2030. MDE's emissions analysis shows that the 2030 GGRA Plan will come very close to achieving a 50 percent reduction by 2030 without accounting for some anticipated new federal government policies to reduce emissions.

This section includes a discussion of broad-scale efforts by MDOT to reduce GHG emissions from the transportation sector, including electric vehicle (EV) stations, infrastructure design, transportation technology, congestion mitigation, and VMT reduction. GHG reduction efforts related to installation of EV stations and infrastructure design (i.e., cashless tolling) at the existing Bay Bridge would be realized within Corridor 7, whereas reductions in GHG emissions related to transportation technology, congestion mitigation, and VMT reduction would be realized at a larger, statewide scale.

Electric Vehicle (EV) Stations

As of early August 2021, there were over 1,000 EV charging stations in Maryland according to the Maryland Zero Emission Electric Vehicle Infrastructure Council (ZEEVIC), which are powered by "the grid," comprised of energy generated from multiple sources including coal, nuclear, solar and wind. MDOT is in the preliminary stages of developing a task order for solar development at MDOT SHA facilities. EV charging infrastructure is anticipated to be installed as a part of the contract; however, the potential solar development would be grid connected, and thus not for the sole purpose of powering EV charging stations.. The 140-mile US 50 corridor between MD 528 in Ocean City and Washington, D.C., which includes the Bay Bridge, has been designated as an Electric Vehicle Alternative Fuel Corridor by FHWA. MDTA commissioned feasibility studies for EV charging stations in 2016 at five MDTA facilities including the Baltimore Harbor Tunnel, Fort McHenry Tunnel, Point Breeze, the Maryland House Travel Plaza, and the Chesapeake House Travel Plaza. EV charging stations have been installed at four of the five facilities

that were studied, including the Baltimore Harbor Tunnel, Fort McHenry Tunnel, Maryland House Travel Plaza, and the Chesapeake House Travel Plaza. Additionally, MDTA and Baltimore Gas & Electric are in a partnership to install charging stations at the existing Bay Bridge facility.

Infrastructure Design

MDOT continues to emphasize the importance of reducing emissions through design principles including practical and innovative project implementation. MDOT infrastructure design initiatives with potential GHG benefits include:

- MDTA implemented permanent full-time all-electronic (cashless) tolling at all toll facilities across Maryland.
- MDOT Transportation Secretary's Office (TSO) published design guidance for projects applying for MDOT Kim Lamphier Bicycle Program, which provides grant support for a wide range of bicycle network development activities.
- Transportation Alternatives (TA) Program: a reimbursable, federally funded program for local sponsors to complete transportation-related community projects designed to strengthen the intermodal transportation system. The program provides funding for projects that enhance the cultural, aesthetic, historic, and environmental aspects of the intermodal transportation system. The program can assist with projects that create bicycle and pedestrian facilities, restore historic transportation buildings, convert abandoned railway corridors to pedestrian trails, mitigate highway runoff, and other transportation related enhancements.
- Recreational Trails Program: a federally funded program MDOT SHA administers on a reimbursement basis. Like the TA Program, the Recreational Trails Program may reimburse a local project sponsor up to 80% of the project's total eligible costs to develop community-based, motorized and non-motorized recreational trail projects.

Transportation Technology

As a leader in implementing emerging transportation technologies, MDOT is promoting various initiatives including the Maryland ZEEVIC, connected and automated vehicle (CAV) technology, and renewable energy. Total registered EVs in Maryland stands at 36,080 as of August 2, 2021. MDOT's Fleet Innovation Plan supports the conversion of its light-duty and bus fleet to Zero Emission Vehicles (ZEV).

Congestion Mitigation

MDOT continues its comprehensive and innovative approach to mitigating congestion and improving travel and freight reliability through various initiatives, including those within Transportation Systems Management and Operations (TSMO). In 2019, the Coordinated Highways Action Response Team (CHART) Program cleared 31,750 traffic incidents and assisted 39,500 motorists on Maryland highways.

VMT Reduction

MDOT invests in low-emissions travel modes (transit, bicycle, and pedestrian) and provides commuting incentives and information under the Commuter Choice Maryland Travel Demand Management Program. MDOT initiatives related to VMT reduction and low-emissions travel modes include:

- MDOT Maryland Transit Administration (MTA) continues its railcar replacement program, replacing 78 railcars to improve passenger comfort and travel time reliability, and enhancing safety components on the Metro SubwayLink system.
- MDOT MTA launched real-time tracking for MARC Train service in August 2020 to improve traveler information and system management.

3.2.2 Sea Level Rise Vulnerability

Maryland has over 3,100 miles of tidal shoreline associated with the Chesapeake Bay, its tributaries, the Atlantic Ocean, and coastal bays, and is especially vulnerable to the adverse effects associated with sea level rise (Boesch et al 2018). Some of these adverse effects are becoming apparent and include an increase in shoreline erosion, deterioration of tidal wetlands, and saline contamination of low-lying farm fields. "Nuisance" tidal flooding, also referred to as high tide flooding, historically occurred a few days per year, but now occurs 40 or more days per year in some areas, including Annapolis. Surges from tropical storms or Nor'easters also spread farther and higher, inundating roads and infrastructure further inland due to higher sea levels (Boesch et al 2018).

Sea level is rising more rapidly in Maryland than in some other coastal areas because land subsidence is occurring simultaneously (EPA 2016). Projections vary, but forecasters generally believe that sea level along Maryland coastal areas will rise 16 inches to four feet within the next 100 years from expansion of the ocean due to warming and the melting of polar ice sheets and glaciers. While thermal expansion accounted for much of the measurable sea level rise during the 20th century, the melting of polar ice sheets and mountain glaciers is responsible for more than 50 percent of the measured rise since 1993 (Climate.gov 2016).

In 2012, Maryland Governor Martin O'Malley signed an EO entitled, *Climate Change and 'Coast Smart' Construction* requiring state agencies, including MDOT, to consider risks associated with sea level rise in state capital budget projects. The Coast Smart Guidelines recommend designing new major infrastructure projects to avoid or minimize future impacts from sea level rise, storm surge, and coastal flooding over the intended lifetime of the project. These siting guidelines are intended to guide infrastructure development in vulnerable areas, and include the following recommendations:

- Avoid construction or reconstruction of infrastructure projects in areas likely to be inundated within 50 years.
- Avoid locating state "critical or essential facilities" within Special Flood Hazard Areas as designated for the National Flood Insurance Program (NFIP).
- Protect these facilities from damage resulting from a 500-year flood.

In coordination with the FHWA, MDOT, NOAA, US Army Corps of Engineers (USACE), and other agencies, MDOT State Highway Administration (SHA) developed the GIS-based *Climate Change Vulnerability* application as a tool to aid engineers and planners in identifying sea level change and the predicted effects on roads and roadway infrastructure in Maryland. The geospatial application provides a means of visually depicting the extent of flooding and roadway inundation based on projected storm event scenarios for the years 2050 and 2100. For the purposes of this study, figures were prepared to depict the following:

- Flooding based on the Mean Higher High Water (MHHW) for the 50-year storm event in 2050 and 2100
- Flooding based on the MHHW for the 100-year storm event in 2050 and 2100.

The 50-year storm event is expected to have a 2 percent chance of occurring annually while the 100-year storm event has a 1 percent chance of occurring annually. MHHW is defined as the average height of the highest tide recorded at a tide station each day during the recording period.

Figures 3-3 through **3-6** depict the extent of stillwater depth based on the 50- and 100-year storm events projected to occur in 2050 and 2100 associated with the three corridor alternatives. Stillwater is the flood level; not including the effects of waves but including storm surge and astronomic tide.

As indicated in **Figures 3-3** through **3-6**, large portions of the study areas associated with all three corridor alternatives will be subjected to extensive stillwater inundation under both the 50- and 100-year MHHW events projected for 2050 and 2100. Because a new Bay crossing structure would be expected to be in service for decades, engineers and designers would consider the potential range of future impacts into the design, maintenance, and construction of a crossing for any of the three corridor alternatives. A potential future Tier 2 study would include more detailed assessment of sea level rise in the design, engineering, and comparison of alternatives in Tier 2. This would include an evaluation of opportunities to reduce risk and vulnerability to inundation to the extent possible. Some examples of the opportunities to be explored under a Tier 2 analysis include:

- Nature-Based Solutions – Nature-based solutions use natural materials or processes to reduce erosion, wave damage, and flood risks. Examples include conservation, restoration, or construction of coastal dunes, coastal wetlands and marshes, and maritime forest areas (Webb et al 2019).

- Design-Based Solutions – Design-based solutions are those incorporated into the planning and design phases of a project as a means of accounting for projected future conditions. Examples of design-based solutions include raising existing roadways, bridge height considerations, sea walls, incorporating a stormwater pumping system, and incorporating resilience strategies to reduce post-storm flood recovery durations.

With the implementation of the 2012 *Climate Change and 'Coast Smart' Construction* EO**,** sea level rise adaptation and response must now be incorporated into the planning process for Maryland's coastal transportation infrastructure projects. Because the past can no longer be used as a predictor of future conditions, planning must also account for the inherent uncertainties associated with both sea level rise projections and extreme weather events. The 'Coast Smart' Guidelines, established in consultation between the Maryland Department of Natural Resources (MDNR) and MDOT, are intended to guide transportation infrastructure in vulnerable areas. The design guidelines pertain to construction of the structure or infrastructure and recommend designing new major infrastructure projects to avoid or minimize future impacts from sea-level rise, coastal flooding, and storm surge over the project lifetime. The Bay Crossing Study provides an opportunity to incorporate the comprehensive and science-based planning strategies established under the 'Coast Smart' design criteria.

Figure 3-3: 2050 MHHW – 50-Year Storm

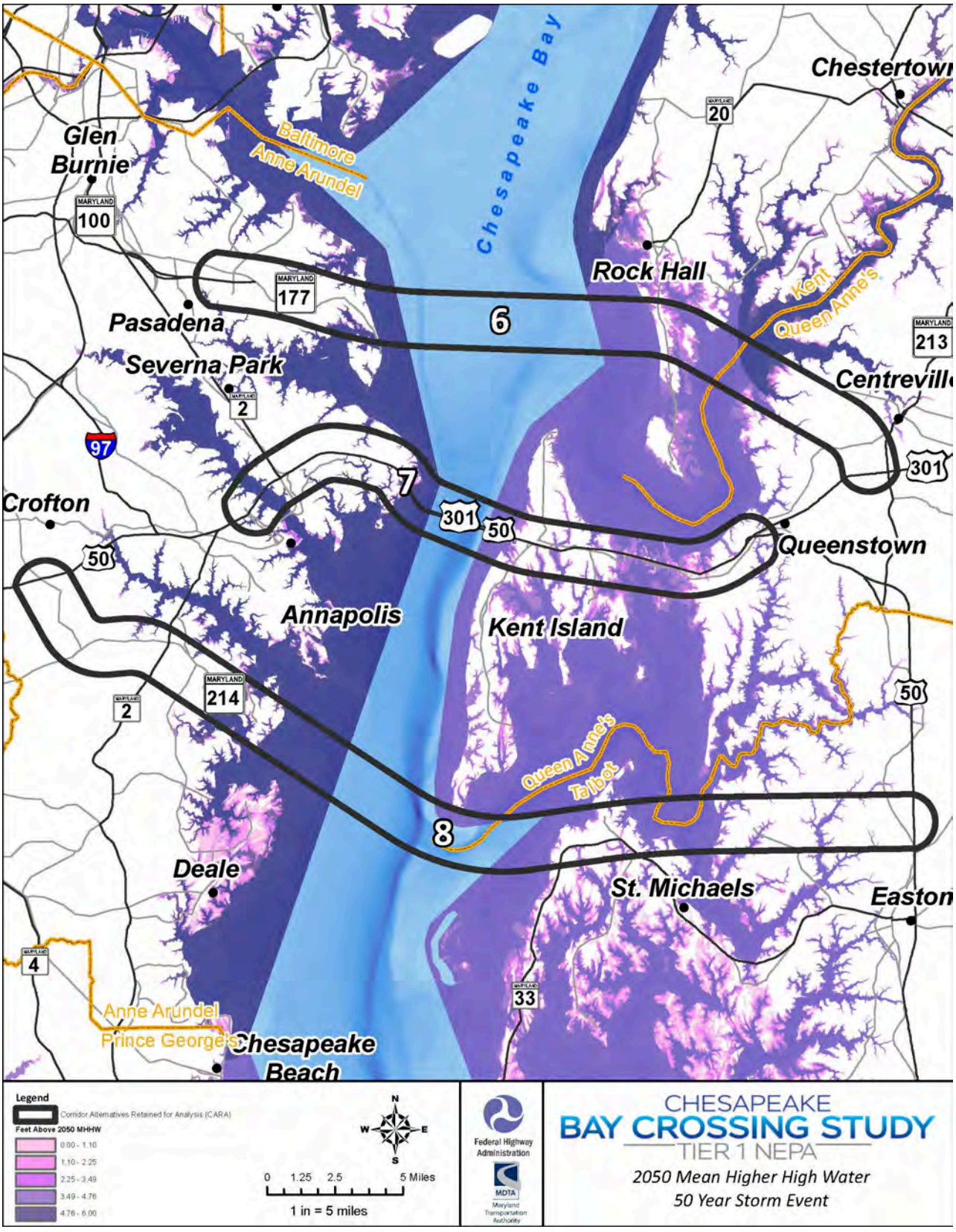


Figure 3-4: 2050 MHHW – 100-Year Storm

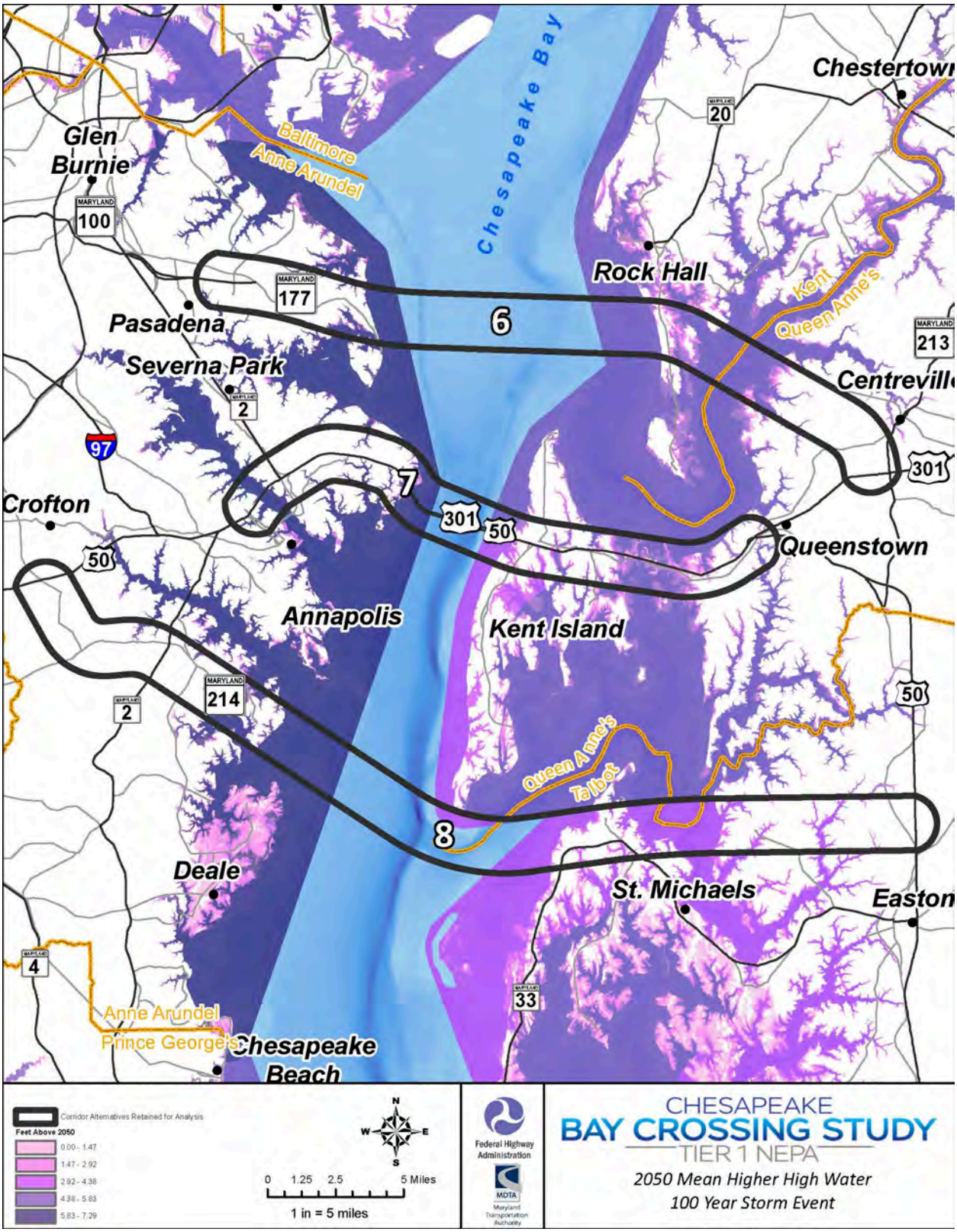


Figure 3-5: 2100 MHHW – 50-Year Storm

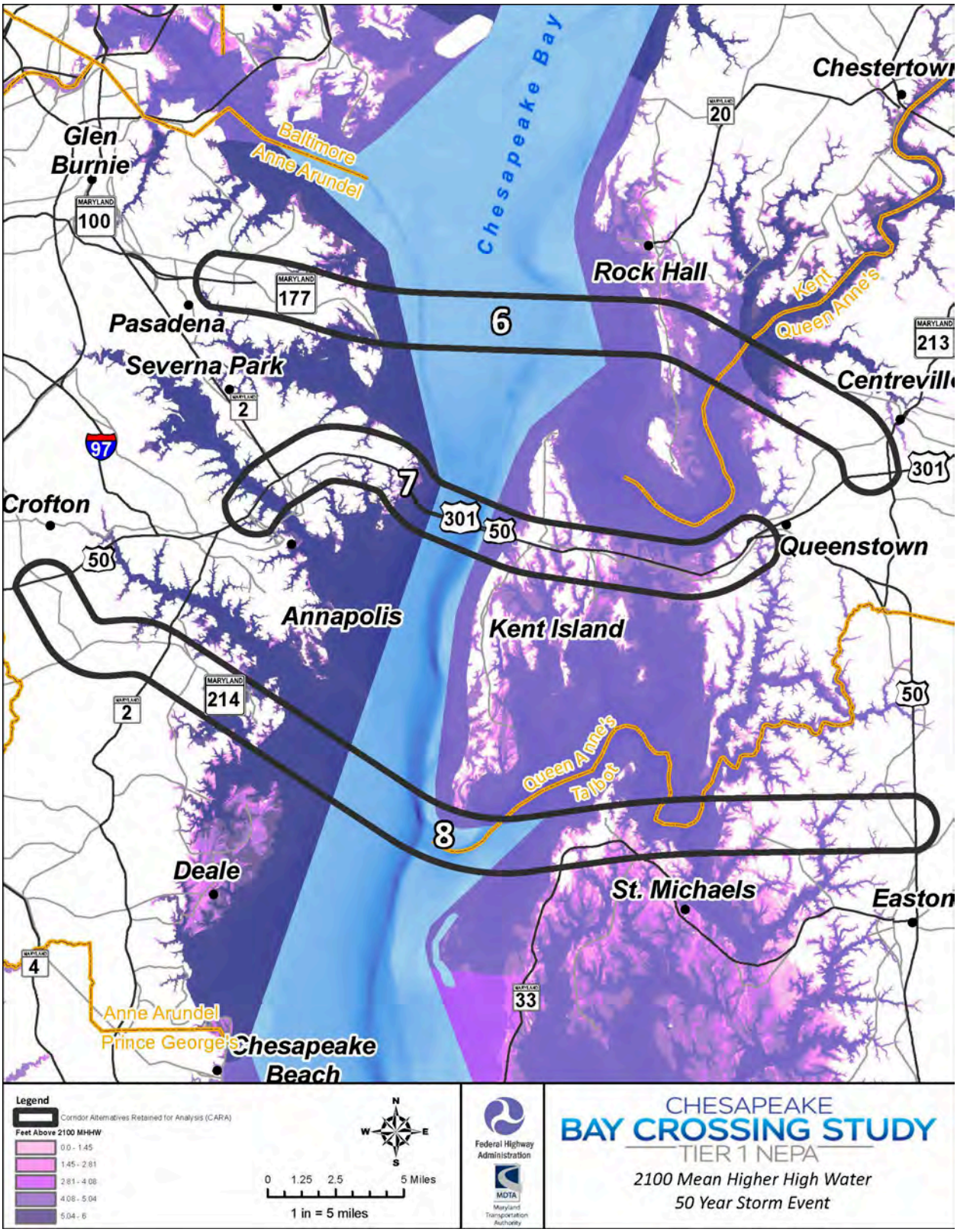
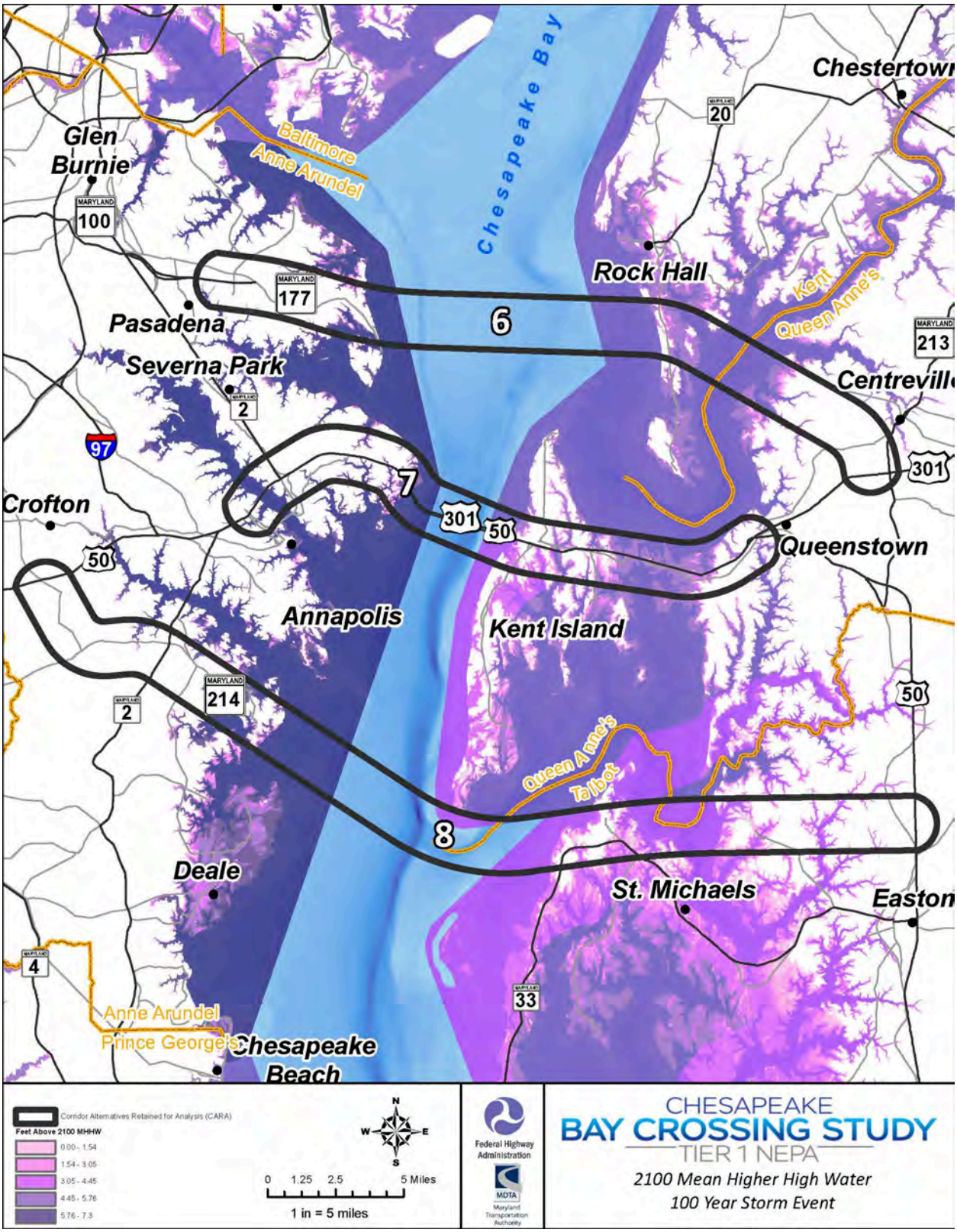


Figure 3-6: 2100 MHHW – 100-Year Storm



3.2.3 Climate Change Resiliency

Climate change presents a growing risk to the reliability, sustainability, and safety of transportation infrastructure. Building resilience into the planning process will aid in recovery from increased hazardous weather events associated with climate change as climate-related disruptions may lead to increased and cascading commuter delays, emergency system failures, and significant economic impacts (EPA 2016). The Coastal Zone Management Act of 1972, as amended, states that "because global warming may result in a substantial sea level rise with serious adverse effects, coastal states must anticipate and plan for such an occurrence." Additionally, the Biggert-Waters Flood Reform Act of 2012 allows the Federal Emergency Management Agency (FEMA) to update its federal insurance rate maps (FIRMs) to include "relevant information and data" on flood hazards caused by land-use changes and "future changes in sea levels, precipitation, and intensity of hurricanes."

Because of the combination of land subsidence and sea level rise, the Chesapeake Bay is one of the nation's most vulnerable regions to the effects of climate change (EPA 2016). Some of these effects have already been observed and the region is expected to experience further shifts in environmental conditions in the coming decades. FHWA publication, FHWA-HEP-17-028, defines "resilience" as "the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions." The Fixing America's Surface Transportation (FAST) Act, signed into law in December 2015, requires transportation agencies to take resiliency into consideration during transportation planning processes.

Transportation infrastructure in coastal areas is especially vulnerable to climate-related events due to the exacerbated flooding associated with more frequent and intense coastal storm surges and rising sea levels. As a result, it is no longer practical to address potential impacts based on historical climate data. Engineers and planners must now understand the potential range of future impacts based on scientific projections of conditions expected in the next 50 years and beyond (EPA 2016).

The 2015 Maryland Commission on Climate Change (MCCC) Act required the MCCC and its participating agencies, including MDOT, to develop an action plan and firm timetable for mitigation of and adaptation to the likely consequences and impacts of climate change in Maryland (MDOT 2020). MDOT prepared and released its 2020 status report outlining several goals that help advance the department's approach to adapt to and combat climate change. These goals include:

- Delivery of the State's transportation infrastructure program that conserves and enhances Maryland's natural, historic, and cultural resources.
- Improving resilience and transitioning to a more efficient transportation system.
- Commitment to multimodal accessibility and mobility for all transportation system users that helps mitigate congestion and shift travel to less emission intensive modes.

As required by the 2015 Act, MDOT must continue to develop comprehensive approaches for reducing transportation asset climate change vulnerabilities and optimize resiliency planning and implementation. MDOT's activities are required to adapt to the potential impacts of a changing climate through planning, maintenance, management, and response.

Climate change is already causing more frequent road flooding, snowstorms, and heat- and cold-related pavement and communication failures. These capacity and performance issues are only expected to worsen. Transportation modernization efforts must promote infrastructure that is built or retrofitted to revised design standards that take the anticipated climate of the region into account (CMAP, No Date).

Comments related to climate change were prevalent among the agency and public comments on the DEIS, and this supplementary analysis has been provided to recognize the potential impacts and considerations related to sea level rise and climate change resiliency at a new Chesapeake Bay crossing. Over time, tidal and storm surges will have impacts on coastal transportation infrastructure, including the existing Bay Bridge and any future crossings. Therefore, comprehensive analysis and adaptation to these potential impacts will be an important component of medium- and long-range planning and project development.

Given the coastal locations of the three CARA, construction within areas most susceptible to the effects of climate change would be unavoidable. Generally, the potential sea level rise and climate change resiliency evaluation presented here has not resulted in the identification of any substantial new distinguishing factors among the CARA that would influence the identification of Corridor 7 as the PCA. Any of the three CARA would face largely similar issues which would require adaptive measures and forward-thinking design to ensure that new crossing infrastructure would withstand the potential effects of sea level rise. A more detailed analysis of opportunities to incorporate resiliency into the selected alternative would be undertaken in a potential future Tier 2 analysis.

3.3 ENVIRONMENTAL JUSTICE

3.3.1 Introduction

Environmental justice (EJ) is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (EPA, 2021). EO 12898, *Federal Actions to Address Environmental Justice (EJ) in Minority and Low-Income Populations* (1994), directs federal agencies to identify and address the potential effects of their programs, policies, and activities on minority and low-income populations and ensure that those populations do not suffer disproportionately high and adverse effects from those actions. US Department of Transportation (USDOT) Order 5610.2(a) (2012) and FHWA Order 6640.23A (2012) implement EO 12898 and establish policies to avoid, minimize, or mitigate disproportionately high and adverse environmental or public health effects on minority and low-income populations from USDOT and FHWA programs, policies, and activities (USDOT, 2012; FHWA 2012). EO 14008, *Tackling the Climate Crisis at Home and Abroad*, which was issued on January 27, 2021, directs federal agencies to make the achievement of environmental justice part of their missions by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts. DOT Order 5610.2C was issued on May 14, 2021 to update USDOT EJ procedures.

3.3.2 Summary of Tier 1 Draft EIS EJ Analysis

In accordance with EOs 12898 and 14008 and applicable USDOT and FHWA EJ orders, an EJ analysis was performed for the Tier 1 Draft EIS to identify potential EJ populations in the socioeconomic study area. US Census Bureau data was analyzed at the Census tract level to identify notably high concentrations of minority and low-income populations that could indicate the potential presence of EJ communities. Census tracts are statistical subdivisions of a county that contain an average of approximately 4,000 people.

The Tier 1 Draft EIS EJ analysis identified three Census tracts with potential low-income EJ populations (Tracts 9505, 8107, and 7064.02) and five tracts with potential minority EJ populations (Tracts 7025, 7064.01, 7064.02, 7065, and 7067). Of these tracts, a small portion of the western end of Tract 7067 is crossed by Corridor 7; the remaining tracts are in the larger Tier 1 Socioeconomic Study Area and are not crossed by any of the CARA. Potential low-income and minority EJ Census tracts are shown on **Figure 4-4** in the Tier 1 Draft EIS. Additional information about the EJ analysis, including thresholds used to identify potential EJ Census tracts, is provided in **Section 4.1.4.2** of the Tier 1 Draft EIS and **Section 5.3.2** of the Bay Crossing Study Socioeconomic Technical Report.

3.3.3 EPA Comments on the Tier 1 Draft EIS

EPA provided the following comments on the Tier 1 Draft EIS EJ analysis:

> EJSCREEN's EJ Index metrics indicate potentially elevated impacts to people of color populations in the context of both air pollutants and traffic proximity at the block group level. Numerous block groups in the area reflect EJ Index values that exceed the 80th percentile nationally for air pollutants and traffic proximity.
>
> [EPA] *Recommendations*: EPA reiterates its recommendation to utilize EJSCREEN and further recommends screening local communities at the block group level rather than the Census tract level where feasible. Given that EJSCREEN provides screening-level data at the block group level, the tool may provide greater data granularity than analyses of Census tracts. EPA also suggests engaging communities to address and verify screening-level findings.

EJSCREEN is an interactive online EJ mapping and screening tool that was developed by EPA to provide a nationally consistent dataset and approach for combining environmental and demographic information. Information in EJSCREEN is primarily provided at the Census block group level, which is a smaller subdivision of Census tracts. Therefore, to address EPA's comments, the EJSCREEN tool was consulted to supplement the Tier 1 Draft EIS EJ analysis and help identify potential EJ communities in the Tier 1 socioeconomic study area at the smaller Census block group level that may not have been identified by the initial review at the somewhat larger Census tract level. The results of the EJSCREEN review will also help inform the methodology and approach for additional EJ analysis and public engagement efforts that would be performed during a potential future Tier 2 NEPA study.

Additional information about EJSCREEN and the results of the EJSCREEN review are discussed below. EPA's comments are provided in **Appendix B**.

3.3.4 EJSCREEN Overview

EJSCREEN is an online pre-decisional screening and mapping tool that is intended to highlight places that may be candidates for further review, analysis, or outreach to support environmental justice initiatives. EJSCREEN does not, by itself, determine the existence or absence of environmental justice concerns in a given location. ESCREEN results should be supplemented with additional information and local knowledge to develop a better understanding of the issues in a selected location.

EJSCREEN provides information for 11 Environmental Indicators, 6 Demographic Indicators, and 11 EJ Indexes. Examples of information provided by EJSCREEN include the following:

- **Environmental Indicators** – air pollution, traffic proximity and volume, and proximity to regulated hazardous waste facilities.
- **Demographic Indicators** – percentage of low-income households, percentage of people of color, and percentage of individuals living in linguistically isolated households based on US Census 2018 American Community Survey (ACS) 5-year data.
- **EJ Indexes** – combine demographic factors with a single environmental factor.

EJSCREEN Index and Indicator values are provided as percentiles. Generally, these percentiles are higher for block groups that have larger concentrations of low-income and/or minority residents and higher Environmental Indicator values. For example, a Census block group with a Demographic Indicator at the 80th national percentile for people of color population means that the percentage of the people of color population in that block group is equal to or higher than where 80 percent of the US population lives.

3.3.5 Summary of EJSCREEN Review

EPA and EJSCREEN do not establish thresholds for identifying groups or communities that are substantially more at risk of experiencing disproportionately adverse impacts. However, EPA identified the 80th percentile as an initial starting point in early applications of EJSCREEN. Also, as discussed in **Section 3.3.3**, EPA comments on the Tier 1 Draft EIS referenced the 80th national percentile for air pollution and traffic proximity EJ Indexes with respect to populations that could experience potentially elevated impacts from a new Bay Crossing. Therefore, based on EPA's comments, the EJSCREEN tool was consulted to identify Census block groups in the Tier 1 Draft EIS socioeconomic study area that exceed the 80th national percentile for the following EJ Indexes:

- Particulate Matter (Fine Particles) ($PM_{2.5}$)
- Ozone
- National-Scale Air Toxics Assessment (NATA) Diesel Particulate Matter (PM)
- NATA Air Toxics Cancer Risk
- NATA Respiratory Hazard Index
- Traffic Proximity and Volume

These EJ Indexes were considered the most relevant to conditions that could be affected or influenced by a new Bay Crossing. Additional information about the environmental indicators that these EJ Indexes represent is available on the EJSCREEN website at https://www.epa.gov/ejscreen/overview-environmental-indicators-ejscreen.

The EJSCREEN review identified 7 block groups in the Tier 1 socioeconomic study area that exceed the 80th or 90th national percentiles for one or more of the EJ Indexes listed above. These block groups are listed

in **Table 3-3** and shown on **Figure 3-7**. Two block groups (7064.01.2 and 7064.01.3) meet or exceed the 80th national percentile for all 7 EJ Indexes that were reviewed. Three block groups (7025.00.3, 7061.01.3, and 7066.00.5) meet or exceed the 90th national percentile for the Traffic Proximity and Volume EJ Index. Three block groups (7064.01.1, 7065.00.1, and 7066.00.5) have multiple air pollution EJ Indexes in the upper 70th national percentile, indicating that potential exposure to these conditions is higher than over 75 percent of the national population. Two block groups (7061.01.3 and 7066.00.5) were identified in EJSCREEN as having populations that are more than 80 percent low-income and more than 90 percent people of color. Two of these 7 block groups (7061.01.3 and 7066.00.5) are outside the Census tracts that were previously identified as potential minority EJ communities in the Tier 1 Draft EIS (**Section 3.3.2**; **Figure 3-7**).

All the block groups listed in **Table 3-3** are concentrated near the western end (but outside the limits) of Corridor 7 (**Figure 3-7**). The presence of block groups with EJ Indexes exceeding the 80th or 90th percentile in this area likely reflects their more intensively urbanized setting in Annapolis relative to other portions of the Tier 1 socioeconomic study area, and their proximity to major roads such as US 50 and MD 2.

Table 3-3: Census Block Groups Exceeding the 80th or 90th National Percentiles for Selected EJSCREEN EJ Indexes

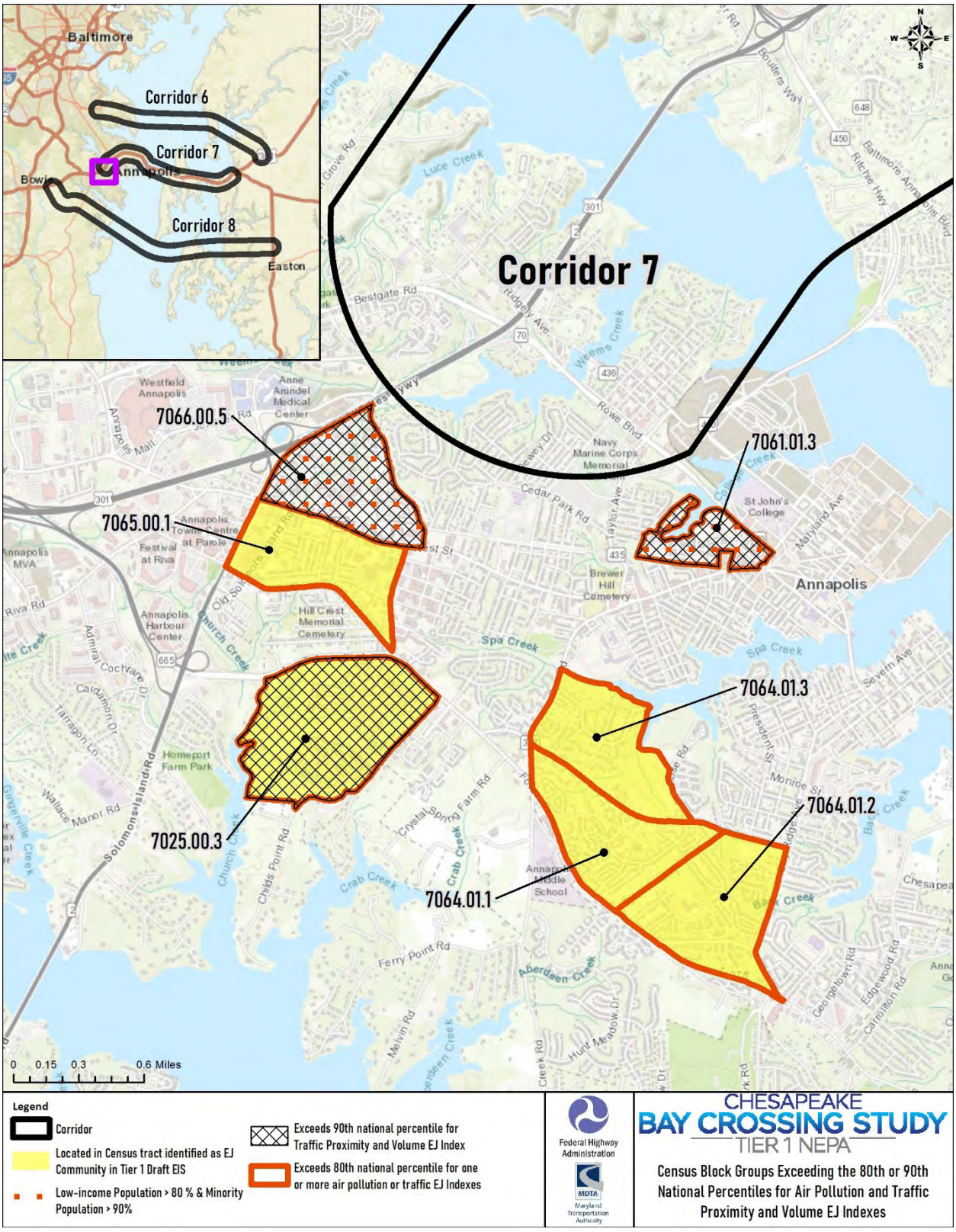
CENSUS BLOCK GROUP	EJSCREEN EJ INDEX (NATIONAL PERCENTILE)					
	$PM_{2.5}$	OZONE	NATA DIESEL PM	NATA AIR TOXICS CANCER RISK	NATA RESPIRATORY HAZARD INDEX	TRAFFIC PROXIMITY AND VOLUME
7025.00.3	83rd	86th	83rd	82nd	81st	90th
7061.01.3	82nd	85th	83rd	81st	81st	92nd
7064.01.1	81st	84th	81st	80th	(79th)	88th
7064.01.2	82nd	84th	81st	80th	80th	87th
7064.01.3	82nd	85th	82nd	81st	80th	82nd
7065.00.1	(77th)	(79th)	80th	(76th)	(76th)	86th
7066.00.5	(79th)	82nd	82nd	(79th)	(78th)	93rd

Source: EPA EJSCREEN Mapping Tool, https://ejscreen.epa.gov/mapper/.

None of the block groups listed in **Table 3-3** are in the CARA. Other than those listed in **Table 3-3**, no other block groups in the Tier 1 Draft EIS socioeconomic study area exceed the 80th or 90th percentile for any EJ Index in EJSCREEN.

The indices not covered in detail above consist of Lead Paint Indicator, Superfund Proximity, Risk Management Plan (RMP) Proximity, Hazardous Waste Proximity, and Wastewater Discharge Indicators. None of the block groups within or crossed by the 3 CARA exceed the 80th State or National percentile for these indices.

Figure 3-7: Census Block Groups Exceeding the 80th or 90th National Percentiles for Selected EJSCREEN EJ Indexes



3.3.6 Conclusion

Seven Census block groups in the Tier 1 Draft EIS socioeconomic study area were identified by the EJSCREEN review as exceeding the 80th or 90th percentiles for one or more EJ Indexes associated with air pollution and traffic proximity and volume (**Section 3.3.4**, **Table 3-3**, **Figure 3-7**). These exceedances indicate the presence of minority or low-income populations with an elevated potential for exposure to air pollution and/or other adverse effects associated with traffic. Two of the 7 block groups identified by the EJSCREEN review (7061.01.3 and 7066.00.5) are outside the Census tracts that were previously identified as potential minority EJ communities in the Tier 1 Draft EIS.

MDTA would further evaluate impacts on the Census tracts and block groups identified as potential EJ communities in a future Tier 2 Study. Other minority, low-income, and disadvantaged or overburdened communities will also be identified, as necessary, through the review of available data and continuing public engagement. This would potentially include EJ communities identified through the detailed review of data from the US Census Bureau, State of Maryland, EPA EJSCREEN, and other applicable sources. More detailed data analysis and public engagement efforts would be developed and performed during a future Tier 2 NEPA study and would be informed and supported by additional opportunities for public and agency input.

3.4 NHPA Section 106

This section provides a brief overview of NHPA Section 106 activities completed concurrently with the Tier 1 NEPA Study, including updated Section 106 coordination since the publication of the DEIS.

FHWA initiated Section 106 consultation with the Maryland State Historic Preservation Officer (SHPO) (Maryland Historical Trust [MHT]) on May 3, 2018 and received MHT's response June 25, 2018. FHWA initiated consultation with ten Federally Recognized Tribes and invited consulting parties to participate in the Section 106 consultation process via letter on November 29, 2018. A second letter dated April 9, 2019, was sent to those invited parties that had not responded. Consulting parties who participated in Tier 1 Section 106 consultation include:

1) Anne Arundel County Office of Environmental and Cultural Resources
2) Four Rivers Heritage Area (aka ALTSCHA, Inc.)
3) Baltimore Heritage
4) Rockaway Beach Improvement Association, Inc.
5) American Chestnut Land Trust
6) Cecil County Planning Commission
7) Eastern Shore Land Conservancy
8) Lower Susquehanna Heritage Greenway
9) Heart of Chesapeake Country Heritage Area
10) Delaware Nation
11) Kent Conservation and Preservation Alliance
12) Kent County Department of Planning, Housing, and Zoning
13) Center for the Environment and Society, Washington College
14) Stories of the Chesapeake Heritage Area (aka Eastern Shore Heritage Inc.)
15) Queen Anne's County Department of Public Works

16) Patuxent Tidewater Land Trust
17) Lower Eastern Shore Heritage Council
18) Lower Shore Land Trust
19) Preservation Maryland
20) Advisory Council on Historic Preservation (ACHP)
21) Chesapeake Bay Foundation
22) City of Annapolis Historic Preservation Division

In consultation with the Maryland SHPO and the Advisory Council on Historic Preservation (ACHP), FHWA and MDTA developed a phased approach for complying with Section 106 historic properties identification requirements during Tier 1 NEPA. Tier 1 Section 106 historic property identification focused on establishing the likely presence of historic properties within the APE (defined as coterminous with the CARA). For more detailed information on the Section 106 methodology and consultation, refer to **Chapter 4.2 of the DEIS** and the **Cultural Resources Technical Report**.

FHWA and MDTA completed an inventory of recorded cultural resources within the 14 Corridor Alternatives. This information was presented as part of the environmental inventory at the Fall 2019 Open Houses where the public was able to provide comments. Once the CARA were identified, FHWA and MDTA prepared a BCS Cultural Resources Technical Report for review and comment. Consulting parties participating in Section 106 consultation, including ten Federally Recognized Tribes, were provided with a draft of the technical report on June 24, 2020. FHWA and MDTA received comments from the MD SHPO, Anne Arundel County Office of Planning and Zoning, Talbot County Department of Planning and Zoning, and the Kent Conservation and Preservation Alliance. Comments received from the MD SHPO and consulting parties were reviewed and considered by FHWA and MDTA, and revisions were made to the report in response.

Section 106 consultation continued in conjunction with the public availability of the Tier 1 DEIS in February 2021. MDTA distributed the Tier 1 DEIS and the final Cultural Resources Technical Report to consulting parties via email links. The DEIS included the identification of the MDTA-RPCA (Corridor 7). Consulting parties were invited to comment on the document in numerous ways that included submitting an email to the BCS email address, visiting the project website and leaving a comment through the online comment form; sending a letter to the MDTA; through private testimony which was available via voicemail during all testimony sessions; and through live public testimony at one of the six testimony sessions.

The MD SHPO responded to the DEIS in May 2021 and acknowledged that their comments provided in August 2020 had been incorporated into the technical report and DEIS. The following consulting parties provided comments on the DEIS: Queen Anne's County, who did not provide comments related to Section 106, and the Kent Conservation and Preservation Alliance, who expressed general concern for the impact to cultural and historic resources. These comments have been considered in the FEIS and ROD. Section 106 consultation would resume during a potential future Tier 2 NEPA study with continued historic properties identification, assessment of adverse effects, and resolution of any adverse effects. Discussion of commitments for Tier 2 is included in the **ROD, Section 7.4**.

4 SUMMARY OF PUBLIC INVOLVEMENT AND COMMENTS

4.1 PUBLIC COMMENT SUMMARY AND STATISTICS

As described in **Section 1.3**, the DEIS was made available for public comment for a period of 84 days, from February 23 through May 17, 2021. The MDTA afforded the public numerous options to comment on the document as shown in **Table 4-1**, below.

A total of 861 public comments were received during the comment period. The methods by which the comments were provided are summarized in **Table 4-1**.

Table 4-1: Comment Methods

COMMENT METHOD	NUMBER OF COMMENTS
Website	581
Email	188
Letter	8
Governor's Website	37
Call-In Testimony	14
In-Person Testimony	33
Total	**861**

4.2 PUBLIC COMMENT TOPIC AREAS

The Bay Crossing Study team has categorized the most frequent topics included in the comments received, as shown in **Table 4-2**. The following sections summarize these topic areas. Note that because most comments addressed multiple categories, the total number of comments per category exceeds the total number of comments.

Table 4-2: Public Comment Topics

COMMENT TOPIC	NUMBER OF COMMENTS
Study Process and Purpose and Need	163
Corridor Alternatives Retained for Analysis (CARA)	597
Range of Corridor Alternatives and Modal and Operational Alternatives	398
Traffic	706

COMMENT TOPIC	NUMBER OF COMMENTS
Environmental Impacts	353
Engineering	130
General Support	23
General Opposition	67

This section includes a brief summary of the topic areas frequently mentioned in the DEIS public comments by category. **Section 4.3** provides a brief summary response. **Appendix A** includes the full text of every comment received, along with detailed summaries and comment responses by topic area. **Appendix C** includes a response to a report prepared by AKRF commissioned by the Queen Anne's Conservation Association.

4.2.1 Study Process and Purpose and Need

Comments in this category expressed concerns related to the Purpose and Need and the study process. Some comments stated that the BCS Purpose and Need was too limited and suggested alternate goals that could have been included. Another recurring theme noted concern over whether background information regarding current and expected congestion at the existing crossing justified the need for a new crossing. In particular, many comments suggested that factors not considered in the traffic analysis would affect the need for a new crossing, such as impacts of the COVID-19 pandemic, future increases in telework, the impact of AET, and changes in commuting patterns.

Many comments noted concern with the tiered study process, specifically, questioning the level of detail and/or the qualitative analysis used to evaluate alternatives in the Tier 1 study. Some comments suggested that the Corridor Alternatives should have accounted for greater limits, because improvements would be needed along more extensive corridors. Comments expressed concerns that the study process prematurely removed alternatives such as the modal and operational alternatives (MOA) and the No-Build from consideration. Some comments expressed concern that the public or agencies, particularly local counties, were not given enough voice in the Study so far.

4.2.2 Corridor Alternatives Retained for Analysis (CARA)

Numerous comments focused on either support or opposition to the CARA (Corridors 6, 7, and 8). Public opinion was most vocal regarding Corridor 7, with 127 comments expressing support for Corridor 7 as the MDTA-RPCA and 283 comments opposing Corridor 7. Corridors 6 and 8 both received fewer comments, most of which were in opposition to these alternatives.

Comments opposed to Corridor 6 presented concerns with traffic impacts to the local roadway network, local community, and potential impacts to the Bay. Many comments supporting Corridor 6 suggested that this alternative would provide a more direct connection to Baltimore and would help divert traffic away from Annapolis and the existing Bay Bridge corridor.

Comments opposing Corridor 7 were received primarily from residents of Annapolis, Amberly/Cape St. Clair, and Kent Island. Residents expressed significant concerns with additional traffic and infrastructure impacts along US 50 and the surrounding local network. Many of the residents opposed to Corridor 7 suggested that another Bay crossing should be placed elsewhere to divert some of the existing traffic and

provide an alternative route for emergencies, such as traffic incidents. There were numerous complaints about the existing local network traffic conditions that make daily trips difficult for residents during peak summer traffic times.

Supporters of Corridor 7 identified it as the most expedient, cost effective, and best alternative to address the existing and future traffic needs. Comments noted the efficiency of using existing infrastructure, which would minimize the impacts and costs for a new Bay crossing.

Comments opposed to Corridor 8 presented concerns with traffic impacts to their local roadway network, local community, and potential environmental impacts. Public input supporting Corridor 8 generally anticipated traffic from Virginia and the south to be diverted along the proposed corridor, thereby alleviating the existing traffic needs at the current Bay Bridge. Supporters also expect Corridor 8 would improve access to the beaches in Maryland. Some supported Corridor 8 because they believe it would bring needed economic development to the area.

4.2.3 Range of Alternatives and MOA

There were numerous comments suggesting other crossing locations or MOA that had been previously considered but dropped as stand-alone alternatives prior to the issuance of the DEIS. Most of these comments suggested that crossings farther north or south of the existing crossing would better divert the existing traffic and provide other benefits, such as economic development. Public comments also reflected support for alternative modes of transportation, including consideration for ferries or public transportation, reduction in carbon footprint, and sustainability. Some comments suggested that combinations of the MOA such as TSM/TDM and transit could be implemented instead of a new crossing.

4.2.4 Traffic

Some comments questioned the projected forecast and future need for a new crossing or additional transportation capacity and provided reasons such as the COVID-19 pandemic, the increase in teleworking, and recent implementation of AET at the existing Bay Bridge would reduce congestion. Comments questioned the methodology of the traffic forecasting and the data used to support it. Many of the traffic-related concerns referenced the existing traffic conditions along US 50, the existing and future impact to the local network, and potential future impacts associated with the CARA.

Comments also expressed concerns that the MDTA-RPCA would cause additional traffic problems along local roadways in Corridor 7. Traffic concerns unrelated to any CARA focused on existing and future noise impacts, impacts during construction, rerouting alternatives, and other constraints in the existing infrastructure to support any new Bay crossing. There was also concern over the potential effects on traffic from temporary bridge closures during maintenance, construction or emergency situations.

4.2.5 Environmental Impacts

Comments concerning environmental impacts were generally in the context of opposing one of the CARA, and worries about the removal of vegetation, increase in noise, and the impact to wildlife and natural resources. Many residents stated concerns about negative effects to their quality of life due to a new Bay crossing, including impacts to local community resources such as schools and parks, as well as their land values. Some comments questioned the value of adding transportation capacity with the forecast in sea

level rise and impacts to the Eastern Shore. Commenters expressed concern over potential impacts to Environmental Justice (EJ) communities from a new crossing, such as property, air quality, drinking water, public health, and other impacts to EJ populations.

4.2.6 Engineering

Several comments offered questions and suggestions for potential engineering solutions, crossing types, typical sections and lane configurations, bridge design, and the construction of tunnels. Accommodations for pedestrians, bicyclists, and mass-transit were also requested for consideration.

4.2.7 General Support

Comments in this category expressed general support for the Study, or for a new crossing, but did not indicate a preference among the Corridor Alternatives. Comments that supported the Study generally based their support on existing traffic congestion and safety concerns and believe that increased capacity is required to relieve existing local traffic congestion. Some comments expressed a sense of urgency, stating that a new crossing is needed as soon as possible.

4.2.8 General Opposition

Comments included in this category indicated general opposition to the Study, opposition to the construction of a new crossing, or support for the No-Build. Many comments expressed concern that the environmental impacts from a new crossing would be too great, citing direct impacts to the Bay as well as potential new sprawl development on the Eastern Shore. Many expressed that a new crossing would not be worth the cost. Some stated a preference to divert taxpayer dollars to other priorities, such as transit, lower-impact alternatives, or projects in other areas. Many expressed opinions that TSM/TDM measures would be more cost-effective. Many comments indicated support for modal and operational alternatives such as transit, TSM/TDM, and ferries.

4.3 PUBLIC COMMENT RESPONSE SUMMARY

The Bay Crossing Study team has reviewed and considered all comments provided on the DEIS. This section provides a brief summary response to the prevalent themes of comments received on the Tier 1 DEIS. The full text of every comment received, as well as detailed summaries and comment responses by topic area, are provided in **Appendix A**.

The Purpose and Need for the Study has been established by MDTA and the FHWA to focus specifically on the extensively documented problems of traffic congestion at the existing Bay Bridge, an MDTA-owned facility. MDTA is responsible for evaluating and considering solutions to the existing problems at the MDTA facility. Thus, the Purpose and Need for the Study, and the transportation solutions proposed with the CARA and Corridor 7, emphasize traffic relief at the existing Bay Bridge. The decision to advance Corridor 7 in the Bay Crossing Study would not preclude separate studies with purposes that differ from the Bay Crossing Study's Purpose and Need.

With respect to the COVID-19 pandemic's potential long-term impacts on future traffic volumes, it is not possible at this time based on limited data to predict how future unforeseen changes such as increased

telecommuting could affect traffic volumes. However, preliminary data indicates that Bay Bridge volumes and congestion have largely returned to pre-COVID levels. Furthermore, it is not anticipated that any long-term changes to summer vacation travel would be affected by the COVID-19 pandemic.

The tiered NEPA review adopted by MDTA for the Study properly identifies impacts at a level of detail that is appropriate for regional planning decision-making across a broad geographic area. Greater detail on environmental impacts of a proposed alignment would be the subject of a potential future Tier 2 study. It should be noted that the intention of the Tier 1 phase is to identify the best corridor for potential new crossing infrastructure; however, the No-Build Alternative would still be considered in any future project-based Tier 2 study. Specific details of a potential new crossing, such as lane and crossing configurations, pedestrian and transit access and other considerations, would also be included in a Tier 2 study.

While some comments expressed skepticism that Corridor 7 would provide the greatest traffic congestion relief, the findings of the traffic analysis based on the best available data strongly indicate that Corridor 7 best meets the traffic relief goals of the Purpose and Need. Other solutions such as TSM/TDM, ferries and transit were also evaluated for the Bay Crossing Study and would continue to be evaluated in Tier 2 in conjunction with a new crossing. A future Tier 2 study would also consider combinations of various MOA as alternatives; these would be evaluated within the context of Corridor 7.

Concerns over whether potential additional capacity near the existing bridge would cause increased traffic on local roadways would be a focus of any Tier 2 study. At that time, MDTA would evaluate local roadway tie-ins in greater detail to ensure that no new traffic problems are created by a proposed new crossing. It is also likely that traffic relief from a new crossing would benefit local roadway networks, due to fewer backups and less cut-through traffic.

It is anticipated that any new crossing capacity over the Chesapeake Bay would lead to potential land use changes and development on the Eastern Shore. Corridor 7 is considered the most consistent with existing and planned land uses. A new crossing in Corridor 7 would add new capacity in close proximity to the existing roadway networks, rather than create substantial new highway facilities where only local roadways currently exist. Therefore, Corridor 7 would likely have the lowest overall impact on land use and development compared to the other corridors studied.

5 AGENCY COORDINATION AND COMMENTS

A comprehensive agency coordination program was implemented throughout the Bay Crossing Study from initiation through the Tier 1 DEIS and FEIS development. As summarized in the DEIS, interaction with the agencies was guided by the Bay Crossing Study Coordination Plan, which was made available on the Bay Crossing Study website. The plan included a general study and coordination schedule and identified Cooperating, Participating, and Notified agencies/stakeholders. Interagency Coordination Meetings (ICM) were held by MDTA to present and discuss information, and to seek feedback on the study process, methodologies, and results of major findings at study milestones with Cooperating and Participating Agencies. In addition, the BCS team asked Cooperating and Participating Agencies with specific expertise or regulatory authority to review and provide comments on Technical Reports used to inform the DEIS. Cooperating Agencies were requested to provide concurrence at key milestones throughout the Study. As outlined in the coordination plan, concurrence was received on the Study schedule and guiding principles for the agency coordination process in February 2018. In July 2018, the Cooperating Agencies concurred on the Purpose and Need statement. In February 2020, the Cooperating Agencies concurred on the identification of the CARA. A total of 12 ICMs were held between the Study initiation in October 2017 and the publication of the DEIS in February 2021.

5.1 SUMMARY OF AGENCY COMMENTS

As described in **Section 1.3**, the DEIS was made available for public and agency comment for a period of 84 days, from February 23 through May 17, 2021. No cooperating agencies objected to identifying Corridor 7 as the MDTA-RPCA. Anne Arundel County provided comments stating their opinion that the Study is flawed and does not justify its purpose or the need for a new crossing. Their argument cited concerns with traffic assumptions, purpose and need, environmental impacts, and stakeholder involvement. However, in September 2021, Anne Arundel County approved a resolution in support of improvements within Corridor 7 and continuing study in Tier 2. Queen Anne's County approved a similar resolution.

Agency comments were generally supportive of the DEIS findings and did not express any major concerns with the DEIS Study that would require MDTA to alter the MDTA-RPCA identified in the DEIS. Many agency comments focused on suggestions and requests for a potential future Tier 2 study, particularly for the specific resources for which the agencies have expertise or regulatory authority. Agencies provided input on the appropriate level of detail, coordination, permitting, data sources, and other information pertinent to a potential future Tier 2 study.

Agency comments also recommended edits and provided suggestions for improvement to the DEIS content. In some cases, agencies requested supplementary studies or new information on issues such as climate change vulnerability, environmental justice, and community and land use impacts. Some agencies commented on the traffic analysis, such as suggestions to evaluate the potential future impacts of teleworking. Agencies also expressed support for the continued evaluation of transit and TSM/TDM strategies in a future Tier 2 study.

Updates to the information presented in the DEIS to address agency comments have been provided in the FEIS as appropriate, and supplementary information has been developed related to climate change vulnerability (**Section 3.2**) and environmental justice (**Section 3.3**). The tiered NEPA review adopted by MDTA for the Study properly identifies impacts at the level of detail appropriate for regional planning decision-making across a broad geographic area. Greater detail on environmental impacts of a proposed alignment would be the subject of a Tier 2 study. The Tier 2 process would be conducted in close coordination with agencies to determine the study methodology, data sources, permitting requirements, and other details relevant to the jurisdiction and expertise of agencies. For comments applicable to a potential future Tier 2 study, MDTA will retain these comments and consider them if a Tier 2 study is initiated.

5.2 AGENCY COORDINATION ACTIVITIES SINCE DEIS

The DEIS was made available to Cooperating, Participating, and Notified Agencies for review and comment through the BCS website (www.baycrossingstudy.com), and an ICM was held on February 24, 2021, to present a summary of the DEIS and discuss the subsequent public hearings. MDTA prepared a PCA Concurrence Package for Cooperating and Participating agency review and held an ICM on August 25, 2021, to present the Draft PCA and comments received on the DEIS. MDTA requested and received concurrence or no objection from all Cooperating agencies as of October 2021. A summary of the ICM meetings held since publishing the DEIS is provided in **Table 5-1.** Agency DEIS comments and responses are included in **Appendix B**. Agency correspondence since publishing the DEIS is provided in **Appendix D**.

Table 5-1: Summary of ICMs since DEIS

DATE	KEY TOPICS
February 2021	MDTA summarizes key topics from the Tier 1 DEIS and presents the plan for April 2021 public hearings
August 2021	MDTA presents the PCA package and summarizes agency and public input on the DEIS. MDTA requests agency comments and cooperating agency concurrence by September 15, 2021.

6 PREFERRED CORRIDOR ALTERNATIVE

The February 2021 Tier 1 DEIS presented Corridor 7 as the MDTA-RPCA based on an analysis of traffic congestion impacts, a wide range of engineering and environmental factors, and input received through public comments and coordination with State and Federal cooperating agencies. The DEIS included detailed analysis and rationale for identification of Corridor 7 as the MDTA-RPCA. This analysis was presented in **Chapter 5** of the DEIS.

Based on the analysis documented in the DEIS, additional input received from agency and public DEIS comments, and supplementary analysis conducted for this FEIS, Corridor 7 has been identified as the Preferred Corridor Alternative (PCA) for the BCS Tier 1 NEPA Study. This chapter presents a summary of the DEIS MDTA-RPCA analysis, a summary of the supplementary analysis conducted for the FEIS, and a discussion of public and agency input. The selection of Corridor 7 is finalized in the ROD (**Chapter 7**).

6.1 SUMMARY FROM DEIS RPCA ANALYSIS

The DEIS presented the rationale for Corridor 7 in three main categories: Traffic Analysis, Engineering and Cost, and Environmental Considerations. A summary of each rationale is included below; refer to **DEIS Chapters 3 and 5** for more detailed information.

6.1.1 Traffic Analysis

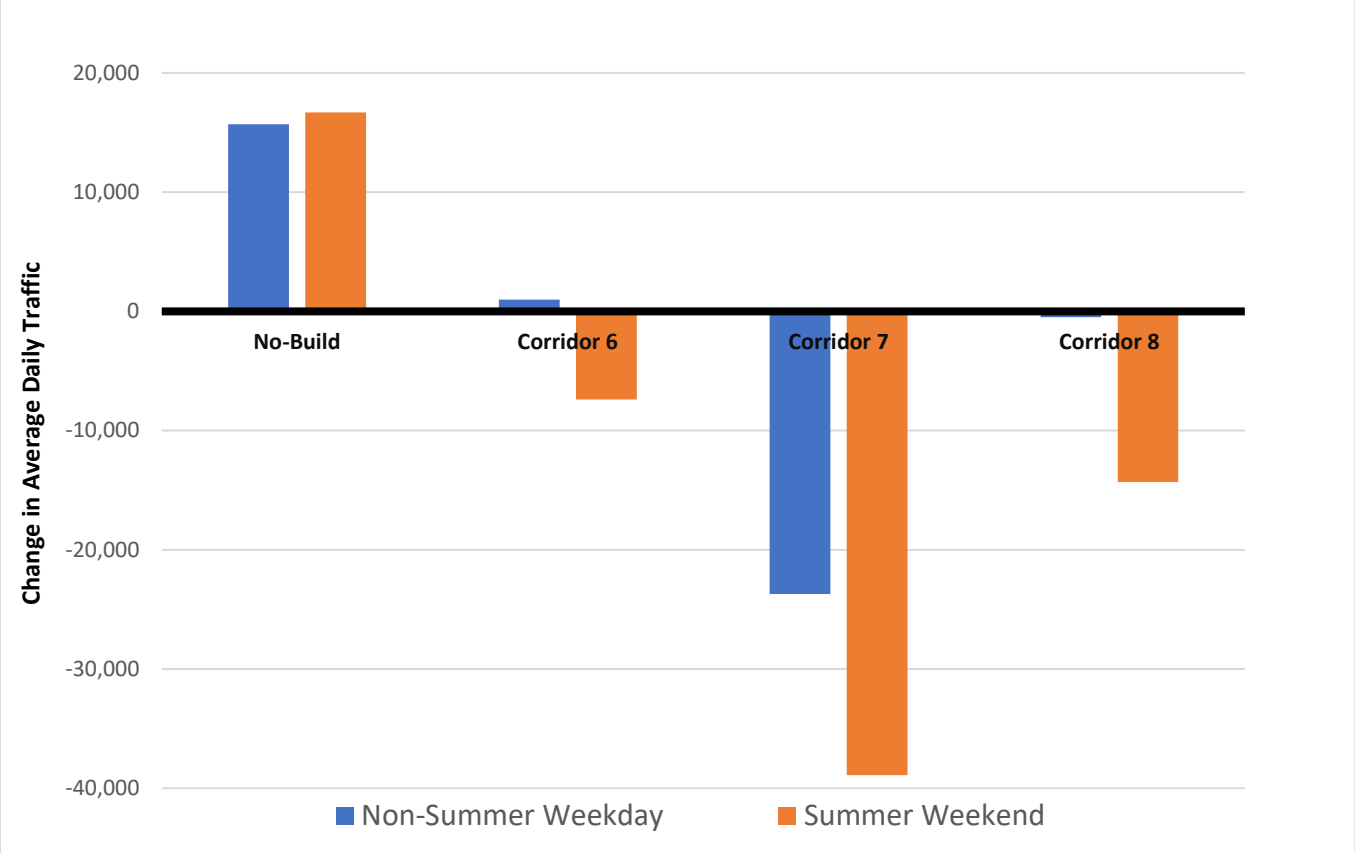
The primary focus of the Bay Crossing Study is to relieve traffic congestion at the Bay Bridge, which would be accomplished by attracting vehicles away from the Bay Bridge and onto a new crossing. The Screening Traffic Analysis (described in **DEIS Section 3.2.2**) determined that Corridor 7 would provide the greatest congestion relief, based on comparison of the Average Daily Traffic (ADT) volumes at the Bay Bridge, for both non-summer weekdays and summer weekends in 2040 for the three CARA.

As shown in **Table 6-1** and **Figure 6-1**, Corridor 7 would result in an estimated reduction of approximately 23,700 vehicles per day (vpd) (or 35 percent) on non-summer weekdays on the Bay Bridge compared to existing conditions, and a reduction of approximately 38,900 vpd (or 33 percent) on summer weekends on the Bay Bridge compared to existing conditions. These reductions in traffic on the Bay Bridge would be substantially greater than could be achieved by a new crossing in Corridor 6 or Corridor 8, as shown in the column labeled 'Change in ADT.'

Table 6-1: 2040 Average Daily Traffic Volumes

CORRIDOR ALTERNATIVE	2040 SUMMER WEEKEND ADT				2040 NON-SUMMER WEEKDAY ADT			
	EXISTING BRIDGE	EXISTING BRIDGE: CHANGE FROM 2017	PROPOSED CROSSING	COMBINED CROSSINGS	EXISTING BRIDGE	EXISTING BRIDGE: CHANGE FROM 2017	PROPOSED CROSSING	COMBINED CROSSINGS
Measure	**ADT**	**Change in ADT**	**ADT**	**ADT**	**ADT**	**Change in ADT**	**ADT**	**ADT**
Existing (2017)	118,600	N/A	N/A	118,600	68,600	N/A	N/A	68,600
No-Build (2040)	135,300	+16,700	N/A	135,300	84,300	+15,700	N/A	84,300
Corridor 6	111,200	**-7,400**	45,700	156,900	69,600	**+1,000**	18,200	87,800
Corridor 7	79,700	**-38,900**	79,700	159,400	44,900	**-23,700**	44,900	89,800
Corridor 8	104,300	**-14,300**	55,200	159,500	68,100	**-500**	20,000	88,100

Figure 6-1: 2040 Average Daily Traffic Volumes – Change from Existing Conditions (2017)

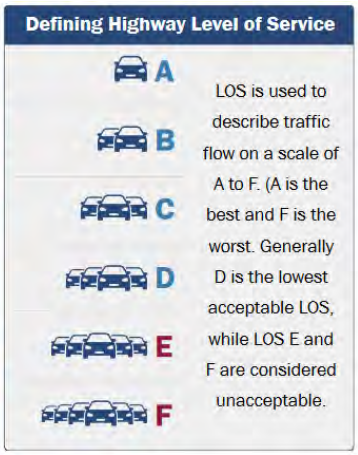


Following selection of the CARA, an additional traffic analysis of Corridors 6, 7 and 8 was conducted. The CARA Traffic Analysis (detailed in Section 5.1 of the DEIS) included evaluation of the 2040 peak-hour traffic volumes and level of service (LOS) for a new crossing in each proposed corridor and the Bay Bridge for both summer weekends and non-summer weekdays. The results of the CARA Traffic Analysis provided greater detail in distinguishing between the CARA.

The CARA Traffic Analysis revealed that substantial new capacity in Corridors 6 or 8 would still result in unacceptable peak-hour LOS at the Bay Bridge in 2040. **Table 6-2** presents the 2040 peak-hour LOS at a new crossing and at the Bay Bridge with the assumed addition of eight new lanes for each new crossing in the CARA. Note that the assumption of eight new lanes was used to evaluate the draw of traffic to a new crossing location without limiting the available capacity. The eight-lane scenario presented here is included for comparative purposes only; the actual number of lanes in any Corridor Alternative would be identified in a future Tier 2 study.

Table 6-2: 2040 Summer Weekend Peak-Hour LOS

Alternative		Summer Weekend		Non-Summer Weekday	
Eastbound or Westbound		EB	WB	EB	WB
No-Build		F	F	F	F
Corridor 6	Existing Bay Bridge	F	E	E	E
	New Crossing	B	A	A	A
Corridor 7	Existing Bay Bridge	D	C	C	C
	New Crossing	D	C	C	C
Corridor 8	Existing Bay Bridge	F	E	E	E
	New Crossing	B	B	A	A



Although Corridors 6 and 8 provide a LOS A or B, the Bay Bridge would still operate at LOS E or F, thus demonstrating that those corridors would not draw enough traffic away from the Bay Bridge to effectively relieve congestion.

With new capacity in Corridors 6 or 8, the Bay Bridge would still experience peak-hour LOS F (eastbound) or LOS E (westbound) on non-summer weekends in 2040. An equivalent amount of new capacity added in Corridor 7 would result in peak-hour LOS D eastbound and LOS C westbound in 2040 on summer weekends at the existing bridge.

On non-summer weekdays, new capacity in Corridors 6 or 8 would still result in peak-hour LOS E on the Bay Bridge in both directions. The equivalent new capacity at Corridor 7 could achieve LOS C in both directions at the existing bridge.

This analysis demonstrates that even a substantial addition of new capacity in Corridor 6 or Corridor 8 would not sufficiently relieve the traffic congestion problem at the Bay Bridge. LOS E and F are considered unacceptable LOS, causing unpredictable travel times and major delays. A new eight-lane crossing in Corridor 7 could much more effectively improve the traffic conditions at the Bay Bridge by achieving LOS C westbound and LOS D eastbound on summer weekends, and LOS C in both directions on non-summer weekdays.

It is important to note that the LOS A and B for the new crossing in Corridors 6 and 8 are due to the inability of a new crossing in either corridor to draw enough traffic away from the Bay Bridge. These high LOS would result from a lower number of vehicles using the new crossing in Corridor 6 or 8, while larger numbers of vehicles would continue to use the Bay Bridge resulting in continued LOS E or F. For Corridor 7, in contrast, the traffic volumes would balance out between the Bay Bridge and the new crossing. This would provide greater congestion relief and improved peak-hour LOS at the Bay Bridge under Corridor 7.

6.1.2 Engineering and Cost

Conceptual project cost estimates were developed for Corridors 6, 7, and 8, as detailed in **DEIS Section 3.5**. The cost estimates included construction, preliminary engineering, and right-of-way acquisition for a project that would extend for the entire length of each corridor, including the Western Shore and Eastern Shore approach roadways.

Tables 6-3 and **6-4** present the range of cost estimates developed for each corridor. The costs in **Table 6-3** assume a bridge across the Chesapeake Bay and the costs in **Table 6-4** assume a bridge-tunnel across the Chesapeake Bay.

Table 6-3: Total Project Costs Assuming a Bridge across the Chesapeake Bay (2020 dollars)

CORRIDOR	LOW END OF RANGE - TOTAL COST IN BILLIONS	HIGH END OF RANGE - TOTAL COST IN BILLIONS	LOW END OF RANGE - MAJOR STRUCTURES COST IN BILLIONS	HIGH END OF RANGE - MAJOR STRUCTURES COST IN BILLIONS	LOW END OF RANGE – ON LAND INFRASTRUCTURE COST IN BILLIONS	HIGH END OF RANGE – ON LAND INFRASTRUCTURE COST IN BILLIONS
6	$6.6	$7.2	$3.9	$3.8	$2.7	$3.4
7	$5.4	$8.9	$3.7	$4.6	$1.7	$4.3
8	$11.7	$15.7	$7.4	$9.6	$4.3	$6.1

Table 6-4: Total Project Costs Assuming a Bridge-Tunnel across the Chesapeake Bay (2020 dollars)

CORRIDOR	LOW END OF RANGE – TOTAL COST IN BILLIONS	HIGH END OF RANGE – TOTAL COST IN BILLIONS	LOW END OF RANGE MAJOR STRUCTURES COST IN BILLIONS	HIGH END OF RANGE - MAJOR STRUCTURES COST IN BILLIONS	LOW END OF RANGE – ON LAND INFRASTRUCTURE COST IN BILLIONS	HIGH END OF RANGE – ON LAND INFRASTRUCTURE COST IN BILLIONS
6	$12.7	$13.3	$9.5	$9.5	$3.2	$3.8
7	$8.0	$13.1	$6.1	$8.5	$1.9	$4.6
8	$13.2	$18.0	$8.8	$11.7	$4.4	$6.3

The lower end of the cost estimate for Corridor 7, which assumed primarily utilizing existing infrastructure, would be the lowest of the three corridors. This indicated that cost savings could be achieved from utilizing the existing US 50/301 approach roadways in Corridor 7.

6.1.3 Environmental Considerations

This section provides a brief overview of the environmental considerations in the DEIS used to inform the identification of Corridor 7 as the PCA. More detailed discussion is included in **DEIS Section 5.3** and **DEIS Chapter 4.**

The evaluation of environmental considerations showed that all three CARA contain substantial environmental resources. The environmental inventory within the two-mile wide corridors, however, does not provide the level of specificity needed to determine actual environmental impacts. Specific impacts would be largely determined by the alignment of a new crossing, which would be much narrower than two miles and would be developed during a future Tier 2 study. The inventory of environmental features is, however, a useful indicator at the Tier 1 level of detail for comparing among broad corridor alternatives. Generally speaking, corridors with greater acreage or numbers of a resource are expected to be more likely to result in impacts to those resources.

Corridor 7 would require the shortest crossing of the Chesapeake Bay due to the narrower width of the Bay at this location. Corridor 7 also has the shortest overall length of approaching roadway improvements necessary due to the presence of existing infrastructure in the corridor (see **Table 6-5**). These factors lead to Corridor 7 potentially resulting in the lowest overall environmental impacts compared to Corridors 6 or 8.

Table 6-5: Corridor and Crossing Lengths in Miles

CORRIDOR ALTERNATIVE	APPROXIMATE LENGTH OF CHESAPEAKE BAY CROSSING	APPROXIMATE LENGTH OF ON-LAND IMPROVEMENTS	APPROXIMATE LENGTH OF OTHER WATER CROSSINGS	TOTAL CORRIDOR LENGTH IN MILES
Corridor 6	11	14	3	28
Corridor 7	4	17	1	22
Corridor 8	12	21	4	37

Table 6-6 displays a selection of key resources included in the environmental inventory. The environmental inventory reflects the breadth and complexity of existing environmental conditions in the two-mile wide corridors and indicates some advantages and some disadvantages for every corridor. However, consideration of all the environmental factors suggests that Corridor 7 would potentially result in fewer environmental impacts to sensitive aquatic resources of the Chesapeake Bay such as open water, fish habitat, and oysters.

Additionally, the presence of the existing US 50/301 corridor could allow for less impactful new infrastructure in Corridor 7. Corridors 6 and 8 would both require a major, new limited-access approach roadway largely on a new alignment through areas that are currently not impacted by major transportation infrastructure. However, a future Tier 2 alternative could be developed in Corridor 7 that expands the existing US 50/301 infrastructure. Much of the land adjacent to the existing US 50/301 roadway is developed, so utilizing this infrastructure potentially minimizes overall impacts to on-land natural resources.

A future Tier 2 alternative that expands capacity along existing roadways in Corridor 7 could also minimize impacts to community cohesion and disruption to residential neighborhoods. Neighborhoods in the vicinity of US 50/301 have generally been developed to the north or south of the highway, often separated by a commercial area or wooded buffers. Thus, new capacity in Corridor 7 could avoid bisecting existing residential neighborhoods; impacts would likely be primarily along the periphery of residential areas. Such an alignment would, however, have greater impacts on commercial land uses and community facilities that are more prevalent alongside US 50/301. Access roads to adjacent land uses could also be impacted.

Corridor 7 is more developed and contains greater amounts of commercial land uses, community facilities, and noise-sensitive areas.

Table 6-6: Summary of Environmental Inventory

RESOURCE	UNIT	CORRIDOR 6	CORRIDOR 7*	CORRIDOR 8
Total Area	Acres	35,010	27,990	46,810
Land	Acres	16,840 (48%)	18,330 (65%)	26,230 (56%)
Open Water	Acres	18,140 (52%)	9,660 (35%)	20,590 (44%)
Community Facilities Total	Count	27	70	37
Forest Land	Acres	4,500	4,500	8,520
Residential Land Use	Acres	5,660	6,560	6,830
Commercial Land Use	Acres	270	930	320
Environmental Justice (EJ) Census Tracts	Count (Census Tracts)	1 Low-income 0 Minority Race/Ethnicity	1 Low-income 1 Minority Race/Ethnicity	0 Low-income 0 Minority Race/Ethnicity
Total Section 4(f) Resources	Count	10	25	24
Area of Section 4(f) Resources	Acres	1,190	1,680	1,650
MDNR Non-Tidal Wetlands	Acres	1,200	1,500	2,080
MDNR Tidal Wetlands	Acres	18,460	10,870	24,940
Surface Waters	Linear Feet	344,380	394,020	471,890
100-Year Floodplain	Acres	3,050	6,640	3,950
Chesapeake Bay Critical Area	Acres	4,910	9,810	8,120
FIDS Habitat	Acres	7,020	6,900	11,410
Sensitive Species Project Review Areas (SSPRAs)	Acres	2,720	2,180	8,630
Green Infrastructure – Total	Acres	4,880	4,480	11,450
Essential Fish Habitat (EFH)	Acres	64,320	36,650	87,680
Submerged Aquatic Vegetation (SAV)	Acres	40	270	460
Oyster Resources	Acres	11,130	3,460	7,960
MDNR Oyster Sanctuaries	Acres	6,465	1,580	2,087
Noise-Sensitive Areas	Acres	5,390	7,400	5,700

* Shading indicates the PCA

For both Corridors 6 or 8, the distribution of residential land and the density of residential subdivisions encompassing the full width of the corridor on the Western Shore would make avoidance of residential communities unlikely. A new crossing in Corridors 6 or 8 would be more likely to cause substantial community impacts by bisecting residential areas, disrupting local mobility, and causing other potential impacts to community cohesion compared to Corridor 7.

As noted in **Table 6-5**, Corridor 7 would require a much shorter crossing of the Chesapeake Bay compared to Corridors 6 and 8, which would potentially result in lower impacts to the open water of the Bay and other major waterways. A longer crossing would require greater impervious surfaces, more substantial construction, and a greater overall footprint of area impacted in the Chesapeake Bay and other major water bodies.

Aquatic resources associated with open water such as Essential Fish Habitat (EFH) and oyster resources are more prevalent in Corridors 6 and 8 compared to Corridor 7. EFH and oyster resources encompass the full width of the corridor in some locations, and thus impacts could not be avoided. Further discussion of aquatic resources is included in **DEIS Section 4.4.7.** Tidal wetlands, which include open water of the Chesapeake Bay, are also substantially lower for Corridor 7 compared to Corridors 6 or 8 (see **DEIS Section 4.4.*2***). Overall, the longer crossing is likely to result in greater impact on the Chesapeake Bay and associated aquatic resources compared to Corridor 7.

Impacts to terrestrial resources such as forest and habitat would likely be greatest under Corridor 8, largely due to the length of on-land improvements and the less developed nature of the corridor. Improvements in Corridor 7 could potentially reduce impacts to such resources by expanding the existing US 50/301 corridor. Some resources associated with coastlines such as Chesapeake Bay Critical Areas and 100-year flood plains are somewhat more prevalent in Corridor 7.

Corridor 7 would likely result in additional new capacity to the existing transportation network in relative proximity to the Bay Bridge, which would be more compatible with existing land use patterns and plans compared to Corridor 6 or Corridor 8.

6.2 SUPPLEMENTARY ANALYSIS RESULTS

In consideration of agency and public comments on the DEIS, MDTA has included supplementary analysis on several topics in this FEIS, including traffic, climate change and sea level rise, environmental justice and cultural resources/NHPA Section 106. The supplemental analysis on these topics is more thoroughly detailed in Chapter 3 of this FEIS.

6.2.1 Traffic

Commenters during public and agency review of the DEIS raised three major traffic-related topics, which were discussed in **Section 3.1** of this FEIS. The first two topics dealt with potential impacts to congestion and travel patterns as a result of changes which have occurred since the time the traffic analyses for the DEIS were performed: the COVID-19 pandemic (which began in March 2020) and the commencement of AET at the Bay Bridge (which occurred in the Spring of 2020). The third traffic-related topic addressed the adequacy of traffic volume data which was collected during August 2017 and used in the DEIS analyses.

COVID-19 Pandemic: The COVID-19 pandemic has had an impact on both weekday and weekend travel patterns throughout the nation, including at the Bay Bridge. Traffic volumes at the Bay Bridge dropped substantially during March 2020, as the pandemic's effects began to be felt, and dropped even further in April 2020, following issuance of a statewide Stay at Home order on March 30, 2020. Travel restrictions were eased somewhat in May, with the issuance of a Safer at Home public health advisory which was effective on May 15, 2020, and volumes began to increase. Following the end of most COVID-19 restrictions in Maryland in mid-May 2021, volumes at the Bay Bridge have generally continued to increase. If a Tier 2 NEPA study is performed, the continuing impacts of the pandemic and recovery would be assessed in that study. Updated traffic volume data would be collected and analyzed to establish a then-current baseline and applied in the calibration of an updated travel demand model used to forecast future

traffic volumes. As with this Tier 1 EIS, the updated travel demand model used in Tier 2 NEPA would be based upon the travel demand models in use by regional and State planning agencies at that time.

All-Electronic Tolling (AET): Additional data collection and analysis has been conducted since the DEIS to consider the impacts of AET implementation at the Bay Bridge. The ongoing significant queues observed, even following full implementation of AET, suggest that the technology, by itself, does not eliminate congestion in the eastbound direction. Given the volumes attempting to cross the Bridge during peak periods, the Bridge itself remains a constraint on capacity. By eliminating the need for vehicles to slow or stop to pay their toll, AET can reduce or even eliminate delays and queuing at the Bay Bridge when low to moderate volumes are present; that is, when the capacity of the Bridge does not constrain traffic flow. However, as volumes approach the capacity of the Bridge, queues and delays still occur, even with AET.

Existing Traffic Volumes: Some reviewers of the DEIS criticized the data used to support the traffic analysis. Among these critiques, commenters suggested that only one day of weekend traffic data from August 2017 was collected, that additional traffic data should have been collected, and that the data used in the DEIS were atypically high. To clarify, seven days of data were collected for summer conditions, starting on August 1, 2017, and ending on August 7, 2017. In response to public comments critical of the traffic analysis, traffic data for the Bay Bridge for June through August 2017 was reviewed. This review confirmed that weekly volumes were relatively consistent throughout the summer of 2017. Total volume during the week of 8/1/17 through 8/7/17 was slightly higher than the average weekly volume of the June through August period, but still representative of that time period and not abnormally high. This variation from the average weekly volume is well within a range typically accepted in traffic engineering analyses. For example, in its "VISSIM Modeling Guidance" (August 2017), MDOT SHA requires that "The volume calibrations should not exceed 10% of the count traffic volume…" (page 14). The 2.29 percent difference noted in **Table 3-2** and **Figure 3-2** is well within this range. The volumes used appropriately represent existing conditions, and the analyses appropriately reflect existing conditions.

6.2.2 Climate Change and Sea Level Rise

Additional analysis was conducted as detailed in **Section 3.2** to discuss the effects of climate change and sea level rise. Topics covered under this analysis included greenhouse gas (GHG) emissions, sea level rise vulnerability, and climate change resiliency. The results are summarized below.

Greenhouse Gas (GHG) emissions: A broad-scale, qualitative assessment of potential GHG emissions impacts was included in this FEIS. The discussion in **Section 3.2.1** identified transportation factors that could produce either an increase or a decrease in GHG emissions. Since there are factors that could influence emissions in both directions, the resulting net increase or decrease in GHG emissions cannot be definitively determined at this time. To perform a GHG analysis, affected road networks would need to be identified and traffic characteristics for those networks would be required, such as VMT and vehicle mix. Under both the No-Build and CARA, VMT in the region is expected to increase between 2015 and 2040, the current projected design year; it is likely that GHG emissions will also increase between 2015 and 2040. Additionally, because the projected increase in truck volumes within Corridor 7 is slightly higher than the projected increase in Corridors 6 and 8, it is possible that Corridor 7 could result in greater vehicle emissions than Corridors 6 and 8. Alternately, when traffic speeds and flow are optimized, less idling occurs; thereby reducing excessive emissions, including GHGs. Since Corridor 7 would result in the best congestion relief at the existing crossing location, with less queuing and idling, it would likely result in

lower GHG emissions from queuing than Corridors 6 and 8. Under a Build Alternative, more efficient vehicles along with reduced congestion could offset some GHG emissions from the transportation network.

Sea Level Rise Vulnerability: MDTA has utilized the MDOT SHA Climate Change Vulnerability application as a tool to aid in identifying sea level change and the predicted effects on roads and roadway infrastructure in Maryland. The geospatial application provides a means of visually depicting the extent of flooding and roadway inundation based on projected storm event scenarios for the years 2050 and 2100. Large portions of the study areas associated with all three CARA would be subjected to extensive inundation under both the 50- and 100-year events projected for 2050 and 2100. Because a proposed Bay crossing structure is expected to be in service for decades, MDTA will consider the potential range of future impacts into the design, maintenance, and construction of a new crossing. A future Tier 2 study would include more detailed assessment of sea level rise in the design, engineering, and comparison of alternatives. This would include an evaluation of opportunities to reduce risk and vulnerability to inundation.

Climate Change Resiliency: Climate change presents a growing risk to the reliability, sustainability, and safety of transportation infrastructure. Building resilience into the planning process will aid in recovery from increased hazardous weather events associated with climate change as climate related disruptions may lead to increased and cascading commuter delays, emergency system failures, and economic impacts. Given the coastal locations of the three CARA, construction within areas most susceptible to the effects of climate change would be unavoidable. Generally, the potential sea level rise and climate change resiliency evaluation presented here has not resulted in the identification any substantial new distinguishing factors among the CARA that would influence the identification of Corridor 7 as the PCA. A more detailed analysis of opportunities to incorporate resiliency into the selected alternative would be undertaken in a potential future Tier 2 analysis.

6.2.3 Environmental Justice

In accordance with EOs 12898 and 14008 and applicable USDOT and FHWA EJ orders, an EJ analysis was performed for the Tier 1 Draft EIS to identify potential EJ populations in the socioeconomic study area. Following comments received on the Tier 1 Draft EIS, a query of EPA's EJSCREEN tool was performed to supplement the EJ analysis and help identify potential EJ communities in the Tier 1 socioeconomic study area. The analysis was used to identify Census block groups in the Tier 1 Draft EIS socioeconomic study area that exceed the 80th national percentile for the following EJ Indexes:

- $PM_{2.5}$
- Ozone
- National-Scale Air Toxics Assessment (NATA) Diesel Particulate Matter (PM)
- NATA Air Toxics Cancer Risk
- NATA Respiratory Hazard Index
- Traffic Proximity and Volume

The EJSCREEN query identified 7 block groups in the Tier 1 socioeconomic study area that exceed the 80th or 90th national percentiles for one or more of the EJ Indexes listed above. All the block groups identified are located near the western end of Corridor 7; however, none are located within any of the CARA. MDTA would further evaluate the areas identified as potential EJ communities in a future Tier 2 study.

6.2.4 Section 106

Section 106 consultation continued in conjunction with the public availability of the Tier 1 DEIS in February 2021. MDTA distributed the Tier 1 DEIS and the final Cultural Resources Technical Report to consulting parties via email links. The DEIS included the identification of the MDTA-RPCA (Corridor 7). Consulting parties were invited to comment on the document in numerous ways that included submitting an email to info@baycrossingstudy.com; visiting the project website and leaving a comment through the online comment form; sending a letter to the MDTA; through private testimony which was available via voicemail during all testimony sessions; and through live public testimony at one of the six testimony sessions.

MD SHPO responded to the DEIS in May 2021 and acknowledged that their comments provided in August 2020 had been incorporated into the final technical report and DEIS. The following consulting parties provided comments on the DEIS: Queen Anne's County, who did not provide comments related to Section 106, and the Kent Conservation and Preservation Alliance, who expressed general concern for the impact to cultural and historic resources. These comments have been considered in the FEIS and ROD.

6.2.5 Conclusion

The supplementary analysis presented in this FEIS has not brought to light information that would change the identification of Corridor 7 as the PCA. The updated traffic analysis showed that the overall results of the traffic analysis and underlying assumptions are still valid, and that changes occurring during the Study such as COVID-19 and implementation of AET at the Bay Bridge have not undermined the need for the Study. The assessment of climate change and sea level rise identified multiple factors related to both increases and decreases in GHG emissions, and potential sea level rise vulnerabilities that would be assessed further in a future Tier 2 study. The EJ analysis identified populations near Corridor 7 that would be given additional consideration if potential impacts in that vicinity are identified in Tier 2 for potential EJ concerns, but no additional populations were identified within any of the CARA. The Section 106 update reflects the Study's continued advancement through the Section 106 consultation process in conjunction with the NEPA study.

6.3 PUBLIC AND AGENCY COMMENTS ANALYSIS

MDTA received 861 comments during the DEIS comment period, including public testimony, written comments, and electronic submissions. Federal, state, and local agencies also provided comments on the DEIS. Generally, comments received have not brought to light new substantive information or major concerns that would affect the validity of the DEIS findings or the decision to choose Corridor Alternative 7 as the PCA.

Public comments emphasized themes such as the need for traffic congestion relief, especially during peak summer travel times. The comments also identified questions about the basis for future travel projections, and whether recent mobility changes as a result of the COVID-19 pandemic should result in a reassessment of the project Purpose and Need. Commenters also raised concerns over the potential for additional capacity to impact local roadways in the vicinity of the Bay Bridge, and concerns for land use change and environmental impacts.

Most agencies did not object to identifying Corridor 7 as the MDTA-RPCA. Anne Arundel County provided comments stating their opinion that the Study is flawed and does not justify its purpose or the need for a new crossing. Their argument cited concerns with traffic assumptions, purpose and need, environmental impacts, and stakeholder involvement. However, in September 2021, Anne Arundel County approved a resolution in support of improvements within Corridor 7 and continuing study in Tier 2. Queen Anne's County approved a similar resolution.

Other agency comments were generally in agreement with the findings of the DEIS and the MDTA-RPCA. Agencies expressed a desire to continue to participate in a future Tier 2 study and provided input and recommendations for Tier 2 concerns, such as detailed impact analysis, mitigation, and other future study considerations. As of October 2021, all BCS cooperating agencies have provided concurrence or no objection to the identification of Corridor 7 as the PCA.

6.4 CONCLUSIONS

MDTA has identified Corridor 7 as the PCA. The analysis presented in the DEIS, considered along with agency and public comments on the DEIS and supplementary information presented in the FEIS indicate that Corridor 7 would have substantial advantages over other CARA, Corridors 6 and 8. Major conclusions of the Study include:

- Additional transportation capacity in Corridor 7 would provide the greatest traffic relief at the Bay Bridge and thus have a greater ability to meet the Purpose and Need.
- Additional capacity in Corridor 7 would divert substantially more traffic away from the Bay Bridge lanes in terms of total vehicles per day on both summer weekends and non-summer weekdays.
- Additional transportation capacity in Corridor 7 would result in greater peak-hour congestion relief on the Bay Bridge lanes compared to an equivalent number of lanes in Corridors 6 or 8.
- Corridor 7 would likely be the least costly of the three CARA because of the ability to utilize existing roadway infrastructure on US 50/301 and the shorter length of crossing over the Chesapeake Bay.
- Corridor 7 would potentially have lower overall environmental impacts due to the shorter Chesapeake Bay crossing length and ability to utilize existing on-land roadway infrastructure along US 50/301. Corridors 6 and 8 would require longer crossings and more roadway infrastructure along a new alignment, likely resulting in greater impacts to sensitive environmental resources in and around the Chesapeake Bay.
- Corridors 6 and 8 would likely cause substantial indirect effects from new connectivity between rural lands on the Eastern Shore and employment centers such as Baltimore and

Washington, DC on the Western Shore. Corridors 6 and 8 could lead to substantial pressure for new residential development, especially on the Eastern Shore, with corresponding impacts to farmland and natural resources. Corridor 7 would have some indirect effects, but they would be more consistent with existing land use patterns and plans.

- Supplementary information developed for the FEIS, including discussion of traffic, climate change and sea level rise, environmental justice, and Section 106, have not brought to light new information that would alter MDTA's decision to identify Corridor 7 as the PCA.
- Federal, state, and local agency comments on the DEIS have not brought to light new substantive information or major concerns that would affect the validity of the DEIS findings or the decision to choose Corridor Alternative 7 as the PCA.

7 RECORD OF DECISION

This Record of Decision (ROD) documents the Federal Highway Administration (FHWA) decision regarding the Bay Crossing Study (BCS): Tier 1 National Environmental Policy Act (NEPA). In making its decision, FHWA considered the information and analysis included in the Tier 1 Draft Environmental Impact Statement (DEIS), all supporting technical reports and public and agency comments and the supplemental information and analysis provided in the Final Environmental Impact Statement (FEIS).

Corridor 7 was identified as the Maryland Transportation Authority-Recommended Preferred Corridor Alternative (MDTA-RPCA) in the DEIS that was made available for public review and comment through the project website (www.baycrossingstudy.com). The public was able to view and comment on the DEIS for a period of 84 days, from February 23 through May 17, 2021. The DEIS Notice of Availability was published in the Federal Register on March 5, 2021. MDTA began the DEIS Public Hearing Virtual Information Room on February 23, 2021 and held live testimony sessions beginning on April 14, 2021. In-person testimony sessions were held on April 21 and 22, 2021.

The Tier 1 NEPA Study represents the MDTA's first step in a two-tiered NEPA approach and includes a high-level review of cost, engineering, and environmental data. The DEIS and FEIS have defined existing and future transportation conditions and needs at the William Preston Lane, Jr. Memorial (Bay) Bridge, identified broad corridor alternatives (including a "No-Build" alternative), documented the corridor alternative screening process, identified the most reasonable Corridor Alternatives Retained for Analysis (CARA), evaluated potential environmental impacts of the CARA, and identified a Preferred Corridor Alternative (PCA). This ROD concludes the Tier 1 NEPA process by formally selecting Corridor 7 as the Selected Corridor Alternative (SCA) that would advance into a potential future Tier 2 NEPA study.

MDTA requested cooperating agency concurrence and participating agency comments on Corridor 7 as the PCA in accordance with the BCS Coordination Plan. Concurrence or no objection from all BCS cooperating agencies was received as of October 2021. **Appendix D** includes all agency correspondence since the release of the DEIS.

A combined FEIS and ROD document (per 23 USC §139(n), 23 CFR 771.124) does not have a comment period or a 30-day waiting period because these documents are published as a single document. The US Environmental Protection Agency (USEPA) publishes a Notice of Availability (NOA) in the Federal Register for combined FEIS/ROD documents.

7.1 ALTERNATIVES CONSIDERED

This section provides a brief overview of the alternatives considered for the Bay Crossing Study EIS that led to the selection of Corridor 7.

Three categories of alternatives were evaluated for the Bay Crossing Study: the No-Build Alternative, Modal and Operational Alternatives (MOAs), and Corridor Alternatives.

The No-Build Alternative included existing infrastructure, planned future improvements, and regular maintenance of the Bay Bridge.

The MOA evaluated include:

- **Transportation Systems Management / Travel Demand Management (TSM/TDM)** – infrastructure and operational changes to improve the function of the existing roadway network without adding major new capacity. Improvements evaluated included AET or variable tolling. AET at the Bay Bridge has since been implemented as of Spring 2020.
- **Ferry Service** – one or more sets of ferry terminals to connect the Eastern Shore and the Western Shore. May include roadway improvements to connect terminals to existing roadways.
- **Bus Rapid Transit (BRT)** – a high-quality, bus-based transit system that would use the existing Bay Bridge or a new crossing.
- **Rail Transit** – rail service providing passenger service that would use a new Bay crossing.

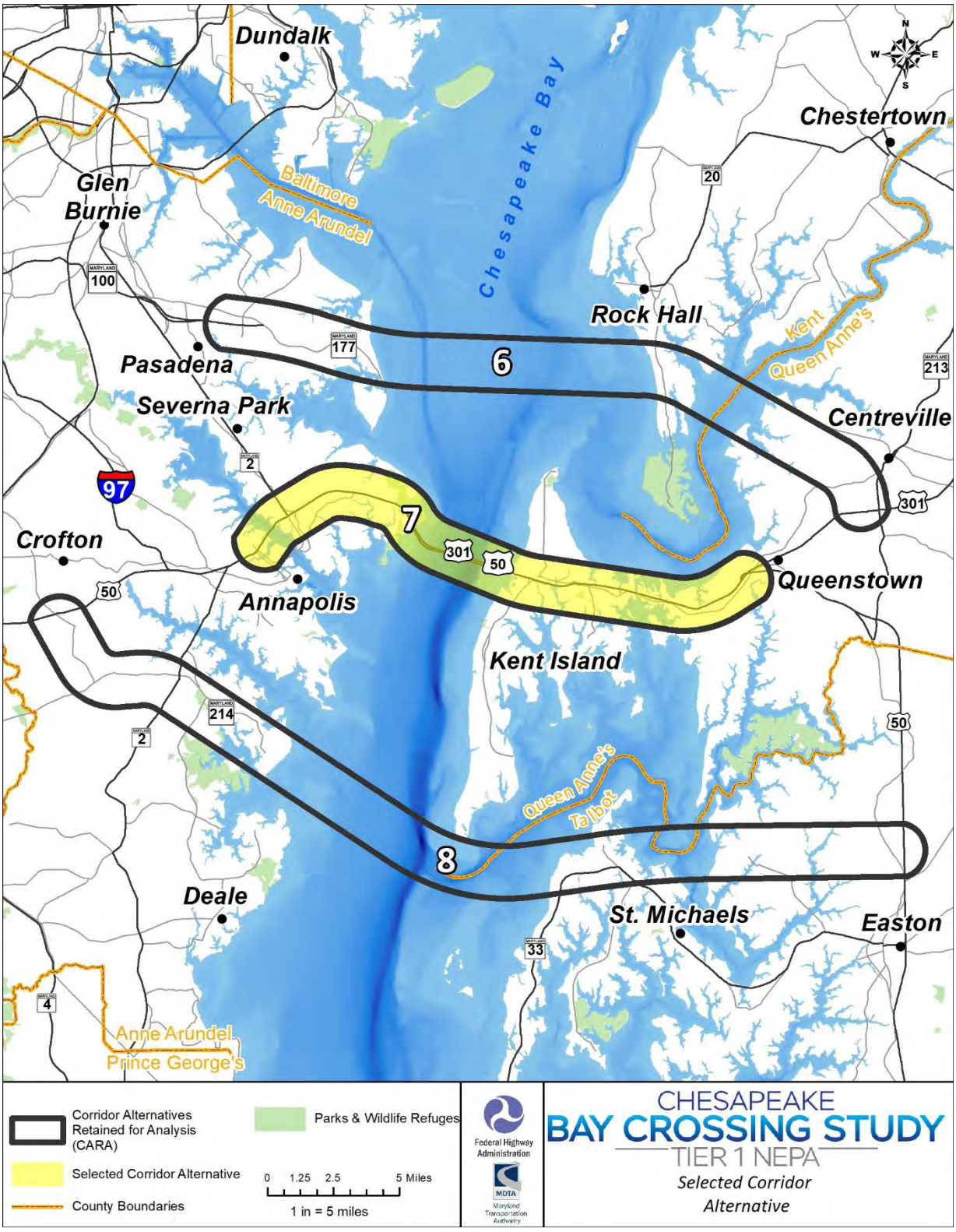
An examination of these MOAs determined that they would not meet the Purpose and Need as stand-alone alternatives because they would not: provide adequate capacity to relieve congestion at the existing Bay Bridge, provide dependable and reliable travel times, or provide flexibility to support maintenance and incident management at the existing bridge. Therefore, all MOAs were eliminated from further consideration as stand-alone alternatives. However, three of the MOAs (TSM/TDM, BRT, and Ferry Service) would be evaluated further in combination with other alternatives within the Tier 1 SCA (Corridor 7) in a potential future Tier 2 study.

Fourteen Corridor Alternatives were developed to include potential Chesapeake Bay crossing locations and the approach roadways that would tie into the existing roadway network.

A screening process was used to compare the 14 Corridor Alternatives based on the ability to meet the Purpose and Need, along with environmental considerations, and cost and financial considerations, as detailed in **DEIS Section 3.2**. The screening resulted in the identification of three CARA. The screening results showed that Corridors 6, 7, and 8 have a greater ability to meet the project Purpose and Need than all the other Corridor Alternatives. The No-Build Alternative was retained throughout the Tier 1 NEPA process.

The CARA were then further analyzed and evaluated to identify a single MDTA-RPCA in the DEIS (Corridor 7) (see **Figure 7-1**). The DEIS included a high-level analysis of environmental impacts, traffic metrics, and consideration of public and agency input.

Figure 7-1: Selected Corridor Alternative



7.2 SELECTED CORRIDOR ALTERNATIVE

Corridor 7 consists of a two-mile wide corridor that follows the existing Bay Bridge road network along US 50/301 from west of the Severn River on the Western Shore to the US 50/301 split on the Eastern Shore. Corridor 7 includes the location of the existing Bay Bridge. The location of the SCA (Corridor 7) is shown in **Figure 7-1**.

7.2.1 Basis of Decision

In consideration of the analysis presented in the DEIS, FEIS and substantive agency and public comments, FHWA selects Corridor 7, the previously identified PCA. This section discusses the basis for this decision.

Analysis of traffic, engineering, cost, and environmental considerations indicate that the Selected Corridor Alternative, Corridor 7, would have substantial advantages over the other CARA, Corridors 6 and 8. Major conclusions of this analysis include:

- Additional transportation capacity in the SCA would provide the greatest traffic relief at the Bay Bridge and thus have a greater ability to meet the Tier 1 DEIS Purpose and Need.
- Additional capacity in the SCA would divert substantially more traffic away from the Bay Bridge lanes in terms of total vehicles per day (vpd) on both summer weekends and non-summer weekdays.
- Additional transportation capacity in the SCA would result in greater peak-hour congestion relief on the Bay Bridge lanes compared to an equivalent number of lanes in Corridors 6 or 8.
- The SCA would likely be the least costly of the three CARA because of the ability to utilize existing roadway infrastructure on US 50/301 and the shorter length of crossing over the Chesapeake Bay.
- The SCA would potentially have lower overall environmental impacts due to the shorter Chesapeake Bay crossing length and ability to utilize existing on-land roadway infrastructure along US 50/301. Corridors 6 and 8 would require longer crossings and more roadway infrastructure along a new alignment, likely resulting in greater impacts to sensitive environmental resources in and around the Chesapeake Bay.
- Corridors 6 and 8 would likely cause substantially more indirect effects from new connectivity between rural lands on the Eastern Shore and employment centers such as Baltimore and Washington, DC. Corridors 6 and 8 could lead to substantial pressure for new residential development, especially on the Eastern Shore, with corresponding impacts to farmland and natural resources. The SCA would have some indirect effects, but they would be more consistent with existing land use patterns and plans.

MDTA received 861 public comments during the DEIS comment period, including public testimony, written comments, and electronic submissions. Federal, state, and local agencies also provided comments on the DEIS. Public comments emphasized themes such as the need for traffic congestion relief, especially during peak summer travel times. Other commenters raised concerns over the potential for additional capacity to impact local roadways in the vicinity of the Bay Bridge, and concerns for land use change and environmental impacts.

Most agencies did not object to identifying Corridor 7 as the MDTA-RPCA. One local government participating agency, Anne Arundel County, provided comments stating their opinion that the Study is flawed. Other agency comments were generally in agreement with the findings of the DEIS and identification of the MDTA-RPCA. Agencies expressed a desire to continue to participate in a potential future Tier 2 study and provided input and recommendations for Tier 2 concerns, such as detailed impact analysis, mitigation, and other future study considerations. All cooperating agencies provided concurrence or no objection on the PCA as of October 2021.

Comments received throughout this Tier 1 Study, including during the DEIS comment period, have not brought to light new substantive information or major concerns that would affect the validity of the DEIS findings or the decision to select Corridor 7. **FEIS Chapters 4** and **Chapter 5** include more detailed summaries of public and agency comments. The full list of comments and responses is included in **Appendix A** (public comments) and **Appendix B** (agency comments).

7.2.2 Environmentally Preferable Alternative

Council on Environmental Quality (CEQ) regulations at 40 CFR 1505.2 (a)(2) require that in a ROD, FHWA shall "*Identify alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives considered environmentally preferable. An agency may discuss preferences among alternatives based on relevant factors including economic and technical considerations and agency statutory missions. An agency shall identify and discuss all such factors, including any essential considerations of national policy, that the agency balanced in making its decision and state how those considerations entered into its decision*."

MDTA has evaluated a range of alternatives in the Bay Crossing Study as outlined in **Section 7.1.** FHWA has determined that the SCA is the environmentally preferable alternative based on the information included in the DEIS and FEIS and summarized in the bullets below.

- The existing US 50/301 infrastructure within Corridor 7 could potentially facilitate a future Tier 2 alternative with lower overall community impacts relative to the other CARA. While Corridor 7 has a greater presence of businesses and community facilities, a future Tier 2 alternative that expands capacity along existing roadways in Corridor 7 could minimize impacts to community cohesion and local mobility, and reduce the potential disruption caused from bisecting residential neighborhoods relative to Corridors 6 or 8. Much of the land adjacent to the existing US 50/301 roadway is developed, so utilizing this infrastructure potentially minimizes overall impacts to on-land natural resources.

- Corridor 7 would require a much shorter crossing of the Chesapeake Bay compared to Corridors 6 and 8, which could result in lower potential impacts to open water of the Bay and other major waterways. Aquatic resources associated with open water such as essential fish habitat (EFH), tidal wetlands, and oyster resources are more prevalent in Corridors 6 and 8 compared to Corridor 7.

- Corridor 7 would likely result in additional new capacity to the existing transportation network in relative proximity to the Bay Bridge, which would be more compatible with existing land use patterns and plans compared to Corridor 6 or Corridor 8. This would likely result in lower indirect effects from land use development.

7.2.3 All Practicable Means to Avoid or Minimize Environmental Harm

CEQ regulations at 40 CFR 1505.2 (a)(3) require that in the ROD, FHWA shall "*State whether the agency has adopted all practicable means to avoid or minimize environmental harm from the alternative selected, and if not, why the agency did not. The agency shall adopt and summarize, where applicable, a monitoring and enforcement program for any enforceable mitigation requirements or commitments*."

In selecting Corridor 7, FHWA has considered the broad-scale potential for environmental impacts from a new crossing in each of the Corridor Alternatives. The DEIS provides discussion of the presence and distribution of environmental resources within the corridors and, where possible, discussions of the potential for avoidance of those resources. Resources which have no potential for avoidance, such as those that cross the full width of a corridor, were given particular attention and considered throughout the alternatives evaluation.

Because of the broad scale nature of the Tier 1 evaluation and corridors evaluated in this Tier 1 Study, specific avoidance, minimization and mitigation measures relating to individual resources are not applicable. A potential future Tier 2 NEPA study would consider alternatives within the Tier 1 Selected Corridor at a level of detail that would allow for consideration of all practicable means to avoid or minimize environmental harm from Tier 2 alternatives. MDTA and FHWA would continue to coordinate with the public and agencies to ensure all practicable means to avoid or minimize environmental harm are considered in a future Tier 2 NEPA study and during a future permitting phase. It is anticipated that MDTA would be the responsible party for monitoring and ensuring the implementation of all permitting requirements and associated mitigation to be determined during the potential future Tier 2 study.

7.3 PUBLIC AND AGENCY OUTREACH

MDTA has conducted an extensive public outreach campaign throughout the Tier 1 NEPA study to ensure public and agency input has been considered throughout the process. MDTA has posted updates, documentation, and public comments received to the BCS website throughout the Study (www.baycrossingstudy.com). Public comment opportunities have included:

- **November 2017** – An online Scoping Meeting was held to seek input on the project scope and Purpose and Need.
- **Spring 2018** – Open House meetings were held at six locations to present and solicit comments on the Purpose and Need, the environmental review process, corridor development, and screening process.
- **Fall 2019** – Open house meetings were held at seven locations to present the range of alternatives considered, the screening analysis and results, and the preliminary CARA.

- **Winter/Spring 2021** – The DEIS was made available to view and comment on the document for a period of 84 days, from February 23 through May 17, 2021. A virtual information room and six public testimony sessions (including virtual and in-person) were held.

A comprehensive agency coordination program was implemented throughout the Bay Crossing Study from project initiation through the Tier 1 DEIS and FEIS development. As summarized in the DEIS, interaction with the agencies was guided by an Agency Coordination Plan, which was made available on the BCS website. The plan included a general study and coordination schedule and identified Cooperating, Participating, and Notified agencies/stakeholders. Interagency Coordination Meetings (ICMs) were held by MDTA to present and discuss information, and to seek feedback on the Study process, methodologies, and results of major findings at Study milestones with Cooperating and Participating Agencies. In addition, the BCS team asked Cooperating and Participating Agencies with specific expertise or regulatory authority to review and provide comments on Technical Reports used to inform the DEIS. Cooperating Agencies were requested to provide concurrence at key project milestones throughout the Study. As outlined in the coordination plan, concurrence was received on the Study schedule and guiding principles for the agency coordination process in February 2018. In July 2018, the Cooperating Agencies concurred on the Purpose and Need statement. In February 2020, the Cooperating Agencies concurred on the identification of the CARA. Concurrence or no objection from all BCS cooperating agencies was received as of October 2021 on Corridor 7 as the PCA.

7.4 COMMITMENTS AND NEXT STEPS

This ROD concludes the Tier 1 Phase of this Study. The intent of the Tier 1 Phase has been to identify a potential corridor location for a future crossing of the Bay. The specific alignment of a potential new crossing has not been defined in Tier 1. Additionally, the type of crossing, such as a bridge or bridge-tunnel, has not been evaluated or identified in Tier 1. A Tier 2 study would evaluate options such as a bridge, a bridge-tunnel, or replacement of the existing Bay Bridge. Following issuance of this ROD, the MDTA may advance a Tier 2, project-level NEPA study. In comparison to the more general Tier 1 analyses, a potential future Tier 2 NEPA study would result in decisions made on a project-level (site-specific) analysis, through evaluation of specific alignments within the Tier 1 SCA. The potential future Tier 2 analysis would include detailed engineering design of alternative alignments and the assessment of potential environmental impacts associated with those alignments. Consistent with NEPA's requirements, agency and public involvement would be an essential part of the Tier 2 NEPA study. Analysis and data used to compare alternatives and determine impacts would be updated for a Tier 2 study, such as traffic data and existing environmental conditions, to reflect the most recent available information at the time of the study.

Specific activities for a potential future Tier 2 study would include the elements listed below. This list is not exhaustive but presents a selection of some main components of a potential future Tier 2 study.

- Refinement of Purpose and Need to reflect project-level issues;
- Updated traffic analysis to reflect current conditions at the time of a Tier 2 study;
- Identification of alignments within the Tier 1 SCA;
- More detailed engineering of alternatives, evaluation of crossing types, and specific assessment of potential environmental impacts;

- Consideration of MOA in combination with a new crossing and/or other MOA within the SCA;
- Public and cooperating agency involvement and response to Tier 2 DEIS comments;
- Continued consideration of the No-Build Alternative;
- Selection of a Preferred Alignment within the Preferred Corridor;
- Identification of appropriate mitigation measures;
- Evaluation and coordination of permitting requirements for natural resources compliance including Section 404 of the CWA, floodplains, ESA Section 7, forest, Coastal Zone Management Act, Chesapeake Bay Critical Areas, and others;
- Preparation of a Tier 2 EIS, and;
- Completion of a Tier 2 ROD.

In a potential future Tier 2 NEPA study, avoidance and minimization measures would be considered and recommended; the potential for unavoidable adverse direct, indirect and cumulative impacts would be documented; and appropriate permitting and mitigation measures for any unavoidable impacts identified. Results of the analyses conducted during Tier 2 would inform decisions regarding engineering for a specific crossing and supporting transportation network, cost considerations, and mitigation. Final project design and construction would follow final agency decisions based on completion of Tier 2 NEPA Study documents. Examples of regulatory activities resulting from the Tier 2 NEPA study may include Section 4(f) resource avoidance (to the extent such resources are involved); continued Section 106 consultation and execution of a Memorandum of Agreement or Programmatic Agreement to address adverse effects to historic properties, if necessary; and other specific permitting decisions for applicable water, threatened and endangered species, and other natural resources matters.

A future Tier 2 NEPA study would include an evaluation, as appropriate, of the use of properties subject to protection by Section 4(f). If a Tier 2 alternative would require the use of Section 4(f) property, the Tier 2 study would include evaluation of feasible and prudent avoidance alternatives and incorporate all possible planning to minimize harm to Section 4(f) properties.

Identification of historic properties and Section 106 consultation would resume during the potential future Tier 2 study. Section 106 consultation would continue with refining the Tier 2 Area of Potential Effects (APEs) based on the Tier 1 SCA, Corridor 7, in consultation with MD SHPO and the other consulting parties. For more detailed information about the recommendations for continuation of the Section 106 process in Tier 2, refer to **Chapter 8.3** of the ***Cultural Resources Technical Report***.

Impacts to jurisdictional waters of the US (WOTUS) would require coordination with the US Army Corps of Engineers (USACE) and the Maryland Department of the Environment (MDE) and are authorized under the Joint Permit Application (JPA) or Individual Permit process, depending on the level of jurisdictional impact. Impacts to the jurisdictional, non-tidal 100-year Federal Emergency Management Agency (FEMA) floodplain are authorized by the Maryland Department of the Environment (MDE) via the JPA process.

Impacts to lands within 1,000 feet of the mean high water line of tidal waters of the Chesapeake Bay and its tributaries require authorization from the Critical Area Commission.

Coordination with the Maryland Department of Natural Resources (MDNR) and county planning agencies would be required during a Tier 2 NEPA study to evaluate potential impacts to forested areas and forest interior dwelling species (FIDS) habitat. Submerged aquatic vegetation (SAV) and oyster resources and

regulated by MDNR but are also classified as Special Aquatic Sites and regulated by MDE and USACE under Section 404 of the Clean Water Act (CWA).

Coordination with the US Fish and Wildlife Service (USFWS) would be required for any potential effects on listed endangered or threatened species in accordance with Section 7 of the Endangered Species Act (ESA). Coordination with the Chesapeake Bay Oyster Alliance, MDNR, the Virginia Marine Resources Commission, USACE, USFWS, and the National Oceanic and Atmospheric Administration, among others, may be required during a Tier 2 NEPA study to evaluate potential aquatic resource impacts.